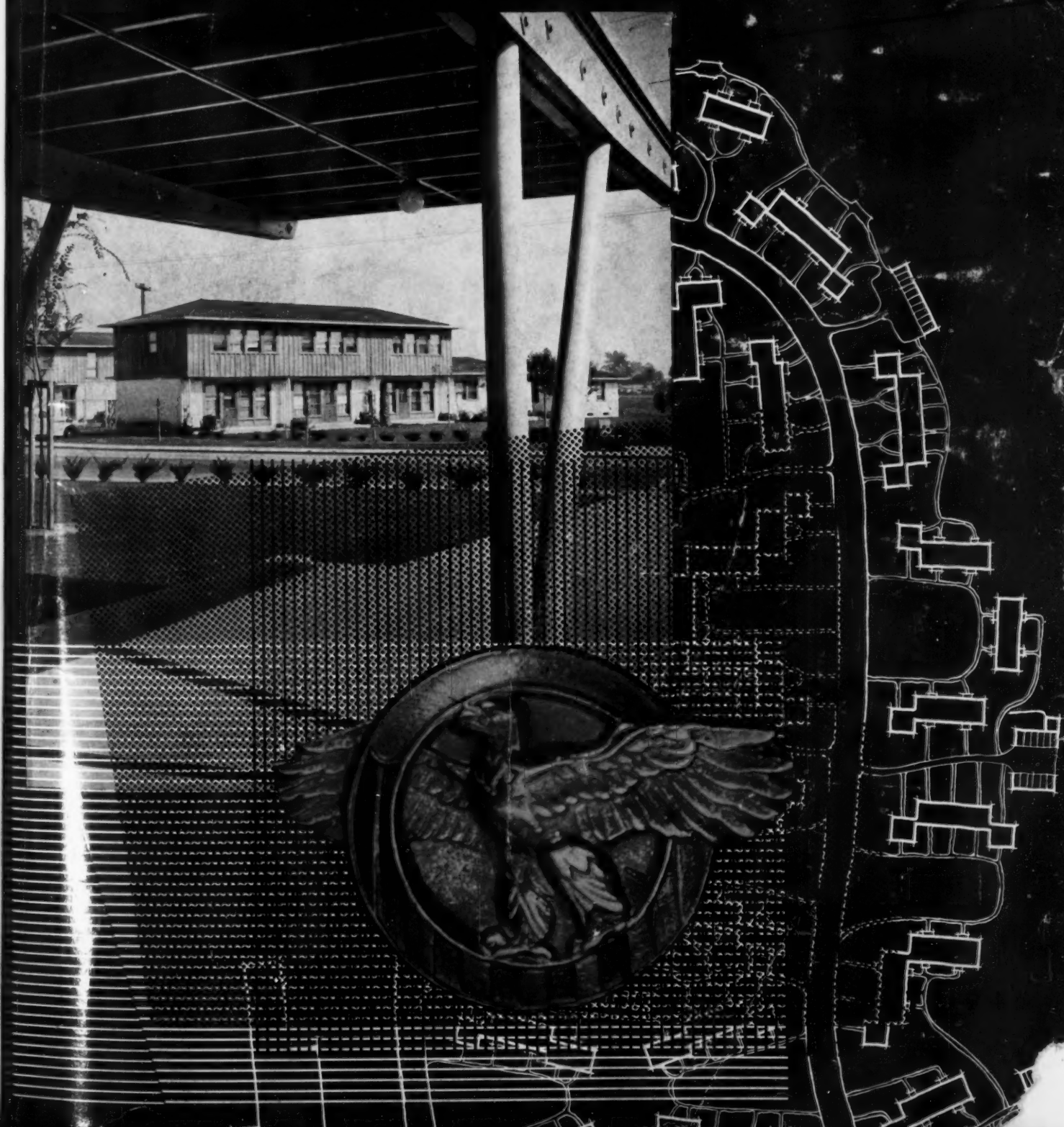
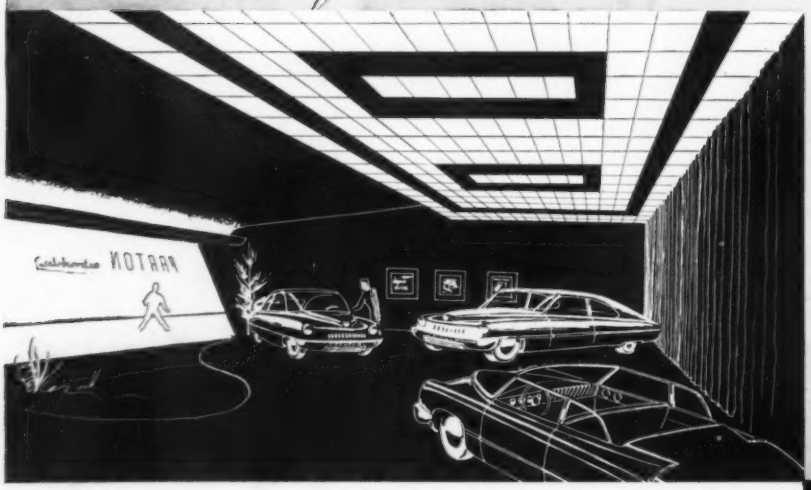
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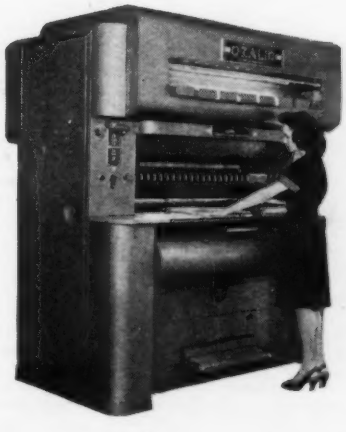
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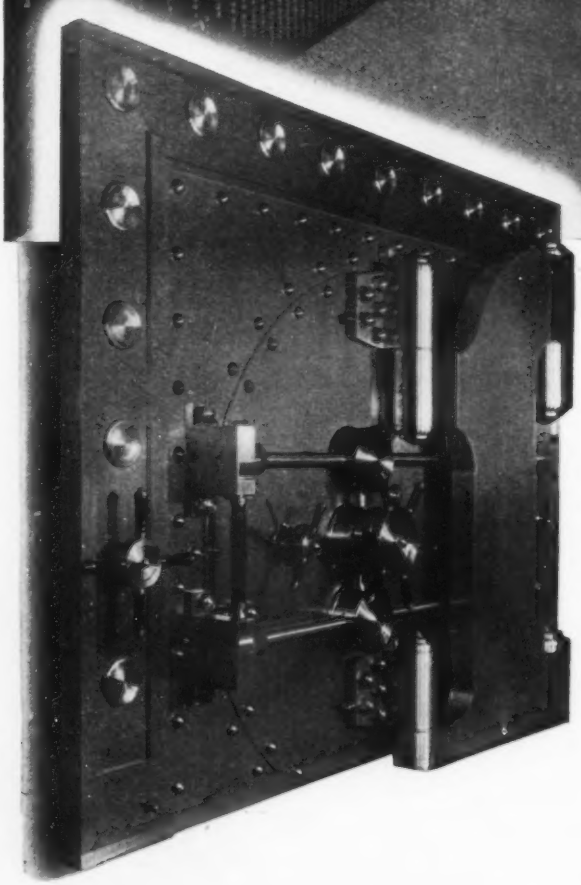


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Jenkins PRACTICAL PIPING LAYOUTS 10

How to plan a DIESEL ENGINE STARTING AIR SYSTEM

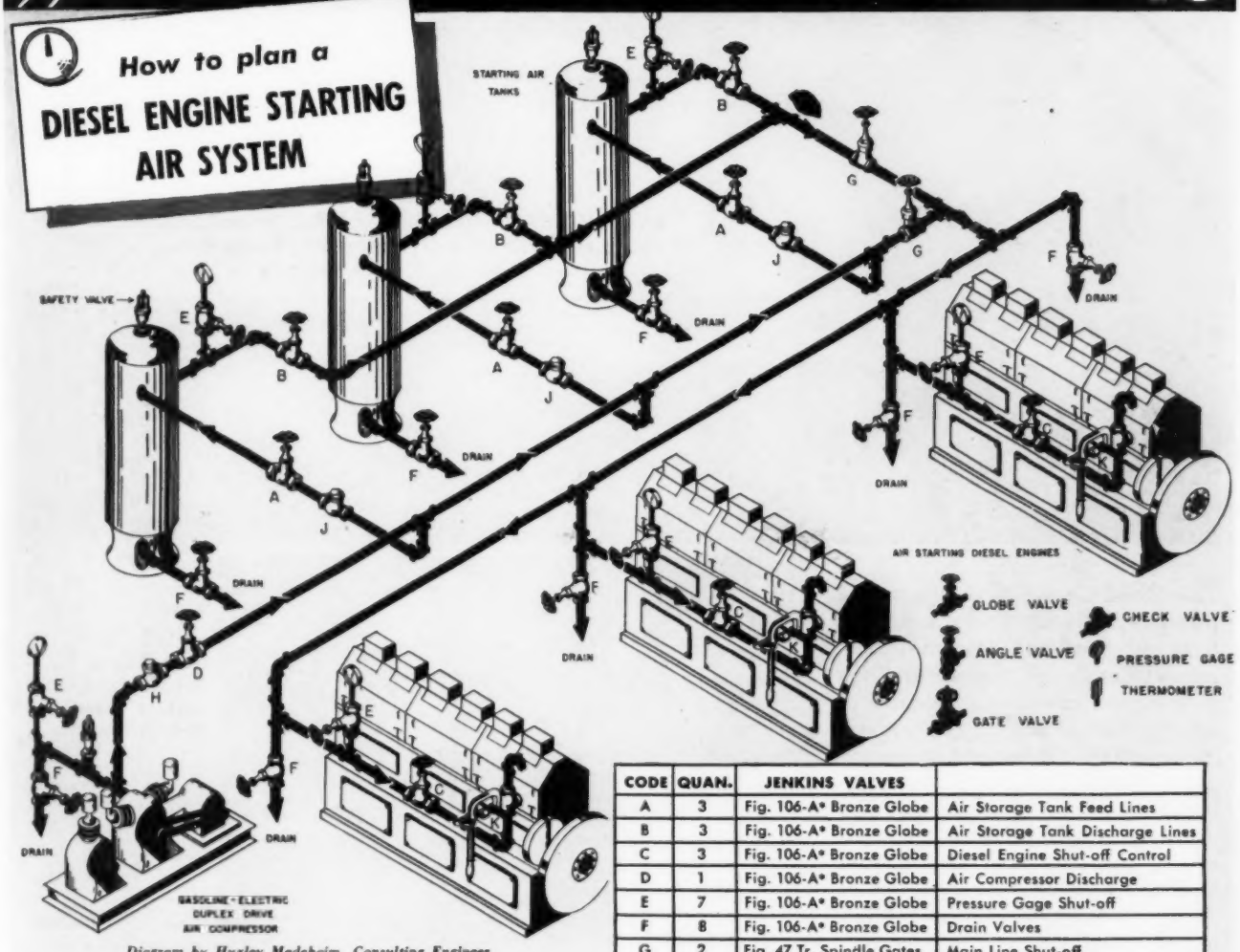


Diagram by Huxley Madeheim, Consulting Engineer

CODE	QUAN.	JENKINS VALVES	
A	3	Fig. 106-A* Bronze Globe	Air Storage Tank Feed Lines
B	3	Fig. 106-A* Bronze Globe	Air Storage Tank Discharge Lines
C	3	Fig. 106-A* Bronze Globe	Diesel Engine Shut-off Control
D	1	Fig. 106-A* Bronze Globe	Air Compressor Discharge
E	7	Fig. 106-A* Bronze Globe	Pressure Gage Shut-off
F	8	Fig. 106-A* Bronze Globe	Drain Valves
G	2	Fig. 47 Tr. Spindle Gates	Main Line Shut-off
H	1	Fig. 54 Br. Check	Air Compressor Check
J	3	Fig. 54 Br. Check	Air Storage Tank Feed Lines
K	3	Fig. 713* Quick Opening	Diesel Starting Valves

*Valves should be fitted with Jenkins Renewable Composition Disc No. 936-A for Air Service.

For starting Diesel Engines of over 150 horsepower rating, the most dependable and widely used method is an air system of the type illustrated in this layout. With this starting system hooked up to Diesel installations generating power and heat for such buildings as factories, hotels, large apartment houses, and stores, interruptions such as might occur through failure of electric supply or storage cells are avoided.

A conventional type system is shown, with a duplex drive air compressor, the electric motor drive, and the emergency gasoline engine drive. In some systems, automatic shutdown of the electric power and automatic starting is provided, responsive to a set air pressure, while in others all operations are manually controlled. Piping is identical for both types.

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Several types and pressure ranges of Jenkins Valves, other than those shown, can be used for this type of layout according to the factors involved. Consultation with accredited piping engineers and contractors is recommended when adapting these suggestions to your own requirements, or when planning any major piping installation.

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Landers Plumbing & Heating Co., Contractors
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This Child Care Building is one of three recently built which reflects a sound approach toward fundamental problems. Since buildings of this kind produce no income to offset maintenance, durability was given maximum weight in selecting materials. And since basementless, floor-slab construction was adopted, radiant heating, that would take care of the special heating problem, was installed. Byers Wrought Iron was utilized in the water lines, and in the entire heating system.

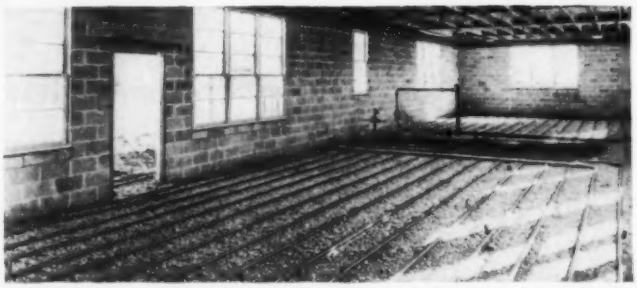
The buildings were 10-room, 1-story. Byers Wrought Iron pipe, welded into grids, was laid on a gravel bed, and covered with a concrete slab. The wrought iron water line was also embedded in the slab. An asphalt tile floor covering was then applied.

The heating medium is hot water, furnished by an American Radiator hand fired boiler, and circulated by a Trane pump. Design was based on a 10°-70° temperature.

The use of wrought iron in these responsible services follows established precedent, for wrought iron's unusual service qualities have been recognized by engineers for years. It is readily formed and fabricated. It expands and contracts at practically identical rates with concrete, which combats cracking. It has high heat emission. And its unusual structure . . . tiny fibers of glass-like silicate slag threaded through a body of high-purity metal . . . gives it unusual resistance to corrosive attack.

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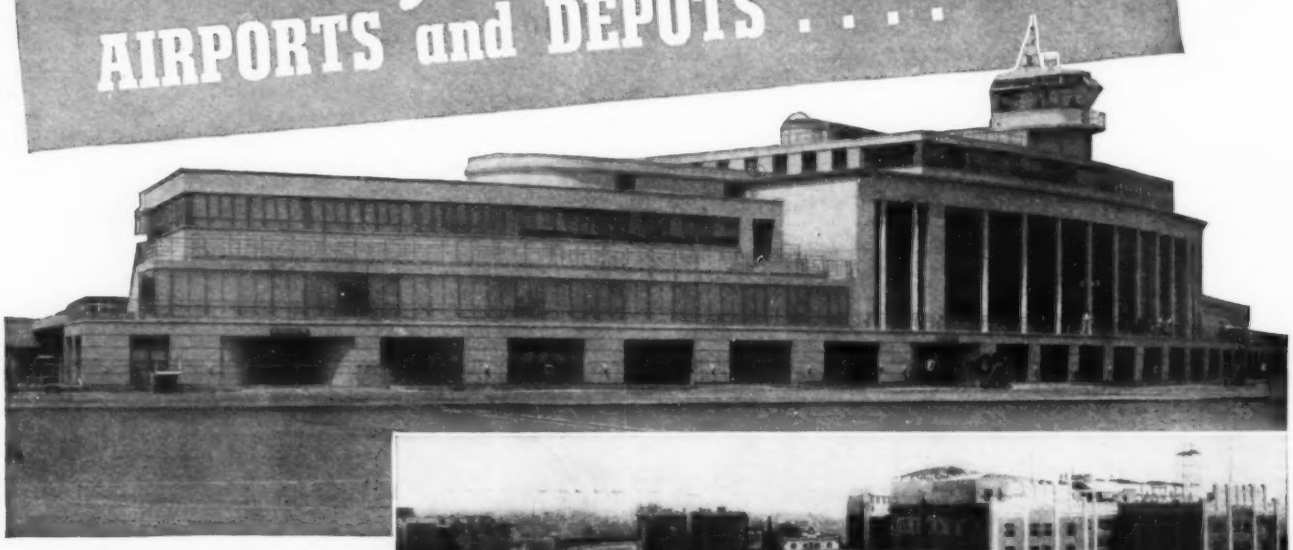
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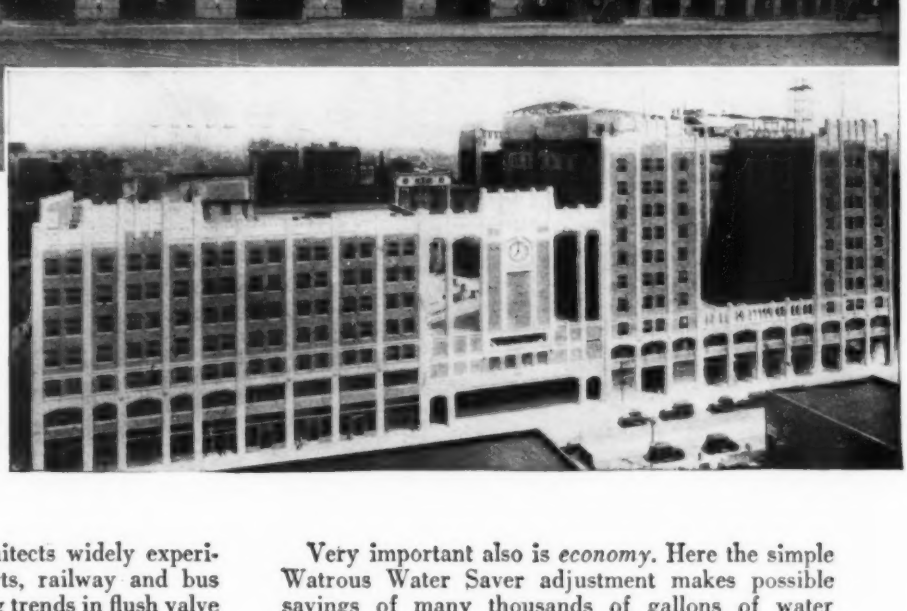
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A recent survey among architects widely experienced in the design of airports, railway and bus depots discloses some interesting trends in flush valve selection.

For example, there is a definite trend toward foot-operated flush valves for both closet bowls and urinals. Concealed flush valve installations are also favored by many. A summary of these trends is included in the booklet offered below.

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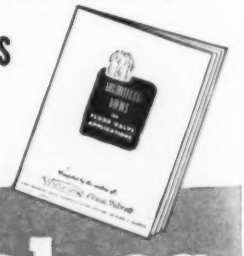
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ARCHITECTS' VIEWS ON FLUSH VALVE APPLICATIONS

A survey of interesting trends in the selection of flush valves for buildings is given in Bulletin No. 477. Write for your copy. See Sweet's Catalog for full information on Watrous Flush Valves.



Watrous Flush Valves

THE RECORD REPORTS

Building Holds Center of Materials Stage • A Quarter Billion Is Added to Veterans Emergency Housing Fund CPA Ups Prices • FHA Launches Home Remodeling Program

Wartime pressures, while drawing away from the rest of the nation's economy, are settling their uncertainty and government regulation increasingly about the building industry in these May days six years after the Nazi sweep across the Low Countries into France.

Of course, the goal is different — production for peace instead of war — but the pressure is similar, to achieve unprecedented output for a vital emergency. Private building, held down during the war, now must overcome the lost years — but must do it first by channeling practically all material into housing.

Reconversion Director Snyder, in his recent quarterly report, warns of the critical situation in the following words:

"The nation's housing shortage, already of a magnitude unparalleled in American history, is still growing. It will become more acute in the next few months."

Some Projects Exempted

All operations are proceeding under general restrictions set forth in Veterans' Housing Program Order No. 1. Hardly had spring knocked on the nation's doors on March 21 than the Civilian Production Administration, given new stipends and increased personnel from the Congressional pocketbook, directed that no new construction or repairs to existing structures (with exceptions for small amounts) could be undertaken without U. S. authorization. Excepted were projects already begun and the following items:

Roads, streets, sidewalks, railroad or street or interurban or plant railway tracks or operating facilities (other than buildings), fences, silos, bridges, tunnels, subways, pipe lines, power or utility lines, sewers, surface or underground lines, wells, dams or canals.

CPA made clear that no person could sell or deliver materials which he knew or believed would be used in work prohibited under the order.

Prefabrication Rated

But CPA did not stop there. It issued a Prefabricated Housing Order under which participants could obtain preference ratings for scarce materials to maintain their production lines. Not only did this include April, May and June, but also an advance authorization for a percentage of requirements for July, August and September.

Snyder emphasizes that great reliance must be placed on prefabricated mass-produced homes, that the problems are immense, and that "the types of materials that will be used are subject to constant change until production ideas become actualities."

He adds:

"The Housing Expediter contemplates that within a brief period we can create a mass-production industry comparable in size, in opportunity for investment and in employment, with the automobile industry of the 1920s."

As to style of homes, he says that seven out of 12 started this year will be conventional, and that three out of five next year likewise will be conventional types.

CPA further added softwood plywood, hardwood flooring, prefabricated houses, sections and panels to the list of selected critical building materials on which HH preference ratings apply.

$250 Million Added

Congress and the Labor Department as well as CPA, the housing agencies and others, joined in the emergency. The legislators shunted a quarter of a billion additional dollars into quick construction for veterans. They did this after Wilson W. Wyatt, the Housing Expediter, himself told them: "The costs of converting barracks — on which limited experience had been available — were underestimated."

Upon submitting new estimates, Wyatt added pointedly:

"In view of present trends in construction costs, and the fact that experience has proved that this program must be done entirely by means of cost-plus-fixed-fee contracts, it is entirely possible that actual unit costs may prove higher than these estimates."

Labor Role Included

A small sum under the quarter billion in added funds goes to the Department of Labor to:

1. Triple construction workers within a year.
2. Conciliate and arbitrate an anticipated increase in labor disputes, particularly in expansion of prefabricated housing.
3. Adjust wage rates.
4. Extend apprentice training programs.
5. Gather essential data on employment and labor market conditions.

The additional re-use funds sped through Congress as it still threshed over all the angles of housing, including the Patman Bill, particularly the subsidy and price ceiling proposals, and the Wagner-Ellender-Taft general housing bill. Concurrently a Senate Agriculture subcommittee was inquiring into causes for the lumber shortage.

New Outlook Presented

In the course of the Patman Bill deliberations, John D. Small, CPA boss, brought forth some interesting outlook data, pooled from six federal agencies. Total new construction, maintenance and repair for 1946 is set at $14 billion,

(*Continued on page 10*)



—Drawn for the RECORD by Alan Dunn



Insulux Glass Block Panels transmit and diffuse light yet provide privacy along with light.

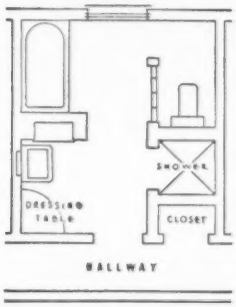
Hints for those who

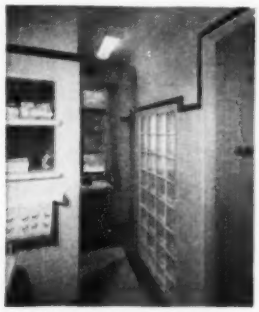
PLAN TO REMODEL

Look at these photographs. They show what can be done to improve a home, when one has a little imagination and some Insulux Glass Block.

- Note the large glass block panel in the living room. This attractive "light wall," which adjoins the summer terrace, provides an abundance of daylight all through the year. And in the winter—it brings considerable fuel savings because of the insulating value of the block.
- Note the departmentalized bathroom. An Insulux partition, and space divided into four distinct sections: toilet, shower, tub, wash stand and dressing room. Think of the advantages!
- Note the glass block partition in the hallway. This is a money-saver, as it borrows needed light from the dining room adjoining.

Panels of Insulux Glass Block are being installed in hundreds of buildings throughout America. In homes, stores, schools, hospitals, offices and factories!

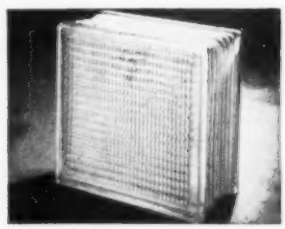




Something new—a departmentalized bathroom! Four distinct sections—toilet, shower, tub, wash stand and dressing room—two of them divided by an Insulux partition.



An Insulux panel can be used to carry natural light from room to room for brightening dark corners.



Insulux Glass Block is a functional building material — not merely a decoration. It is designed to do certain things that other building materials cannot do. Investigate!

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for 1947 at $19.5 billion. Some 1947 estimates run nearly double 1946. Total new construction jumps from $8.8 billion to $13.4 billion; housing from $3.8 billion to $6.6 billion; highways from $0.5 billion to $1 billion; airports from $25 million to $50 million. Notable under housing is the more than tripling of prefabricated construction, from nearly $0.7 billion in 1946 to $2.5 billion in 1947.

Agencies Readjusted

As the Wyatt housing program proceeded, the federal agencies made numerous administrative adjustments, some of which bear noting. Field offices increased; both field and Washington offices added personnel, while top units reshuffled their bureaus. Wyatt named seven Regional Housing Expediters, planned to add others, with Neil Dalton as his Deputy Expediter in charge of community action. He chose as a special consultant on lumber Donald A. Campbell, past president of the National Retail Lumber Dealers Association.

CPA set up a new Construction Bureau to handle authorizations under the veterans' program, to estimate material supplies, and to administer the granting of preference ratings.

Real Estate Rises

Figures came from the NHA reporting an increase in real estate prices since V-J Day of 16 per cent to 18 per cent. Compared to 1940, the present range is from 25 per cent to well above 100 per cent higher, the survey (covering 84 cities of 100,000 or more and 250 smaller cities) indicates. NHA advised also on the basis of this survey that increases in the prices of raw acreage and fully prepared building lots were even greater than those on existing homes.

Building Materials Focal

Supply and prices of building materials remain a focal issue. From the Commerce Department's Construction Division comes this pertinent note:

"While building materials generally are expected to step up production rapidly to meet increasing requirements, lumber may continue in short supply for several years. Earlier forecasts indicated that prospective lumber production and requirements would be in balance in 1946. Current estimates now suggest wide disparity between production and requirements, in view of the tight stock situation and increasing demands for housing."

Wyatt and Small are pushing for top production, and, after conferring with an industry advisory committee, Small's CPA fixed a goal of 32 billion board feet of lumber for 1946, compared to 27.5 billion last year. Demand this year is expected to run 35 billion board feet.

Steel Items Hit

Steel items, of course, were hit by the late winter strike, on the heels of which the coal stoppage brought further threats to production. Too, uncertainty surrounded the steel fabricating plants since the steel wage increase applied only to workers in producing plants; lack of price relief for fabricators affected the picture.

CD findings on metal building materials disclose tight situations for steel windows, bar joists, nails, down spouts, gutters, metal wheelbarrows, extension ladders, auger bits, hand saws, cross-cut saws, and insect metal screen cloth.

A disconcerting picture is given on electrical wiring materials and lighting fixtures: deliveries on new orders for wiring devices, 9 to 18 months; deliveries on utility type incandescent lighting fixtures, stock to 6 months; on ornamental types 3 to 12 months; fluorescent 3 to 12 months.

Porter Shifts Prices

Paul Porter, as Bowles' successor, began shifting prices in the interests of increased production. He granted discretionary upping of ceilings of roughly 20 per cent on softwood plywood; he timed this action with CPA moves to channel half of the entire output into the emergency housing program. He advised that ceilings would be reviewed after June 15 — that is, after three months' operation.

(Continued on page 16)



Dean E. F. Lawrence, Oregon University

ELLIS F. LAWRENCE

Ellis Fuller Lawrence, Dean of the University of Oregon School of Architecture and Allied Arts for the past 32 years, died in Portland on February 27. He was 66.

Recognized as one of the foremost architects on the Pacific coast, Dean Lawrence was a past vice president and a director of the A.I.A., and a member of the City Planning Commission of Portland, the Pacific Coast League of Architects, the Portland Architectural Club, the Oregon State Teachers Association and the Association of Collegiate Schools of Architecture. Twenty-three of the buildings on the University of Oregon campus are of his design, in addition to which he had completed plans for three new buildings — the Science Building, Women's Dormitory and the Union Building — construction of which has not yet been started. He began his architectural practice at Portland, Me., and Boston, Mass.



A. L. Scott, Lockwood Greene president

ALBERT L. SCOTT

Albert L. Scott, president of Lockwood Greene Engineers, Inc., died on March 2 at his home at Chappaqua, N.Y., at the age of 67.

A native of Cleveland, Mr. Scott began his engineering work with Lockwood Greene in 1900, becoming president in 1926. He was a trustee of Chicago and Brown Universities and Spelman College, and a former president of Rockefeller Center, Inc.

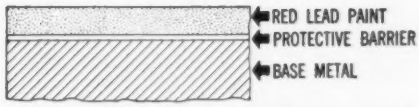
ALBERT J. ELDON

Albert Joseph Eldon, 56, architectural representative for the Insulux Products Division of Owens-Illinois Glass Co., in New England States and New York, died at his home in Bronxville, N.Y., on February 20.

Formerly associated with several New York architectural firms including McKim, Meade & White and Tucker & Marsh, Mr. Eldon joined the Insulux Division in 1936.



Red Lead *halts* Rust-Producing ELECTRO-CHEMICAL ACTION



The invisible safeguard against corrosion
This diagram shows the interfacial film, located at the metal and paint-film interface. The formation and the maintenance of this shield by Red Lead halts electro-chemical action . . . safeguards the metal against rust.

No other protective paint for metal has ever known such wide acceptance by industry, through the years, as Red Lead. And recent scientific research has disclosed that Red Lead's outstanding performance results from basic characteristics of the pigment itself.

Not the least important of these is the ability of Red Lead to halt electro-chemical action — the fundamental cause of rusting.

In this action weak currents are generated, due to physical and chemical differences in the metal and to other factors. These lead to corrosion of the iron.

These factors are always present, but their effects are eliminated by Red Lead.

Here's what happens: Red Lead, because of its singular composition, possesses properties which enable it to form a compact, tightly adherent, protective film, located at the interface of the metal and the paint coating. See cross section diagram above.

This film—so thin that it is not apparent to the human eye—is in very intimate contact with the metal, and its formation halts electro-chemical action — and the corrosion of the metal.

Once formed, it is essential that the continuity of the film be maintained — if the shield is to be effective. When Red Lead pigmented paint is used, any small breaks in the protective shield, due to abrasive action or otherwise, are readily healed. The metal remains in a rust-inhibited condition as long as Red Lead coats the surface.

Specify RED LEAD for All Metal Protective Paints

The value of Red Lead as a rust preventive is most fully realized in a paint where it is the only pigment used. However, its rust-resistant properties are so pronounced that it also improves any multiple pigment paint. No matter what price you pay, you'll get a better paint for surface protection of metal, if it contains Red Lead.

Write for New Booklet "*Red Lead in Corrosion Resisting Paints*" is an up-to-date, authoritative guide for those responsible for specifying and formulating paint for structural iron and steel. It describes in detail the scientific reasons why Red Lead gives superior protection. It also includes typical specification formulas. If you haven't received your copy, address nearest branch listed below.

* * *

The benefit of our extensive experience with metal protective paints for both underwater and atmospheric use is available through our technical staff.

NATIONAL LEAD COMPANY: New York 6; Buffalo 3; Chicago 80; Cincinnati 3; Cleveland 13; St. Louis 1; San Francisco 10; Boston 6, (National Lead Co. of Mass.); Philadelphia 7, (John T. Lewis & Bros. Co.); Pittsburgh 30, (National Lead Co. of Pa.); Charleston 25, W. Va. (Evans Lead Division).

Dutch Boy
Reg. U. S. Pat. Off.
Red Lead

BUILDING NOTES



De luxe apartments planned for Germantown, Pa., feature personalized heating

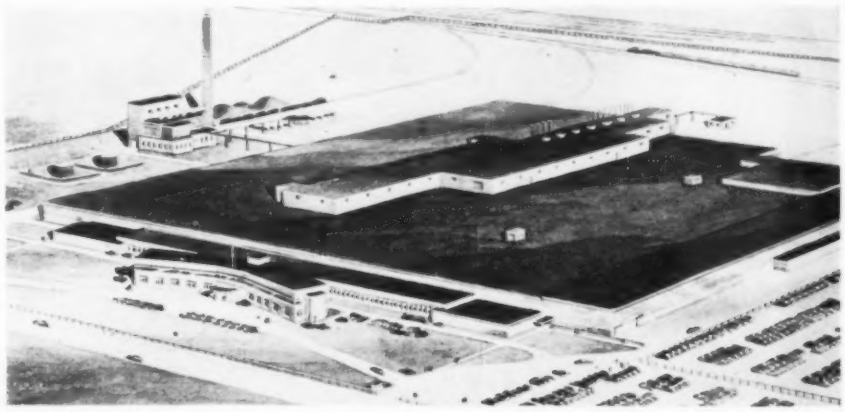
NEW APARTMENTS

Plans for construction of a $5,000,000 apartment house project at School House Lane and Wissahickton Avenue, Germantown, Pa., have been completed by Mayer I. Blum, Philadelphia apartment house builder and operator. Work will begin as soon as materials can be assembled.

The project, to consist of two 11-story buildings, will contain 445 one-, two- and three-bedroom apartments. It will occupy a four-acre tract, with about half of the land given over to gardens and lawns.

One of the features of the new houses will be personalized heating — heating controls which will make it possible for each tenant to regulate the temperature of his own apartment. Other features will be windows which admit the sun's ultraviolet rays, deep-freeze lockers, and optional air conditioning. The two buildings will be of cross design to afford maximum light and ventilation.

A huge lobby linking the two buildings will be lined with public facilities including a main dining room seating 400 persons, four smaller dining rooms, a self-service market, a tea room, drug store, coffee shop, barber shop, beauty parlor, valet, and tenants' laundry room. Roof gardens on each building will have sun-bathing facilities and massage and steam rooms, with attendants for men and women.



General Motors assembly plant at Framingham, one of three of same general pattern

NEW PLANTS

Glass Tower

A 15-story glass tower, 156 ft. high, serviced directly from a circular masonry stem at the center, will be the feature of a wax research laboratory to be built this year in Racine, Wis., for S. C. Johnson & Son, Inc. Frank Lloyd Wright is the architect.

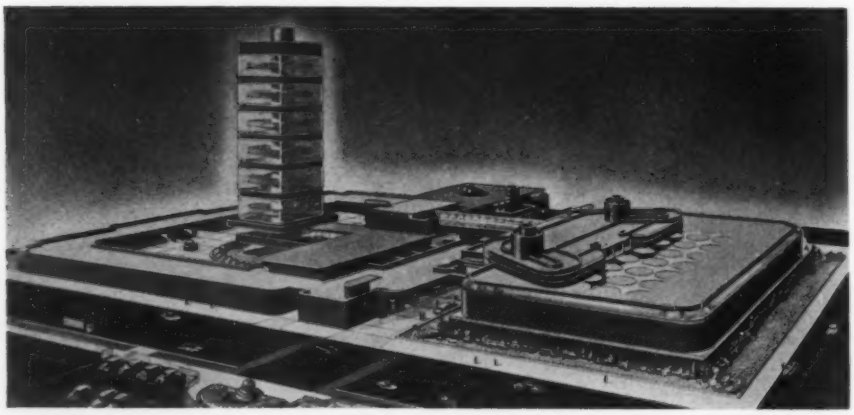
The tower, standing free in a court adjacent to the present administration building, also designed by Mr. Wright, will house research, development and control laboratories and library. Surrounding it will be two- and three-story buildings housing the technical service department, pilot plant, advertising and photographic departments, demonstration and lecture rooms.

Three Alike

Construction is under way on new plants for General Motors at Wilmington, Del., Framingham, Mass., and Atlanta, Ga. All three follow the same general pattern and are of about the same size, with straight-line flow of assembly and sub-assembly operations. Albert Kahn Associated Architects and Engineers, Inc., are the architects.

Specifications call for structural steel frame with metal deck, and metal floor construction. Exterior walls are of brick and glass, with stone trim in the office building. Office partitions are of metal and glass. The walls in the kitchen, cafeteria and office dining room are lined with glazed tile; the executives' dining room is finished in wood.

The office building is V-shaped for better lighting and better access to the kitchen receiving room on one side and the garage on the other side of the connecting wing between office and personnel building. A semi-circular lobby, finished in drift oak paneling and red cedar marble floor, connects at the rear with a two-story passage leading to the assembly building.



A 15-story glass tower will be the focal point of S. C. Johnson & Son's new laboratory

Administration Building

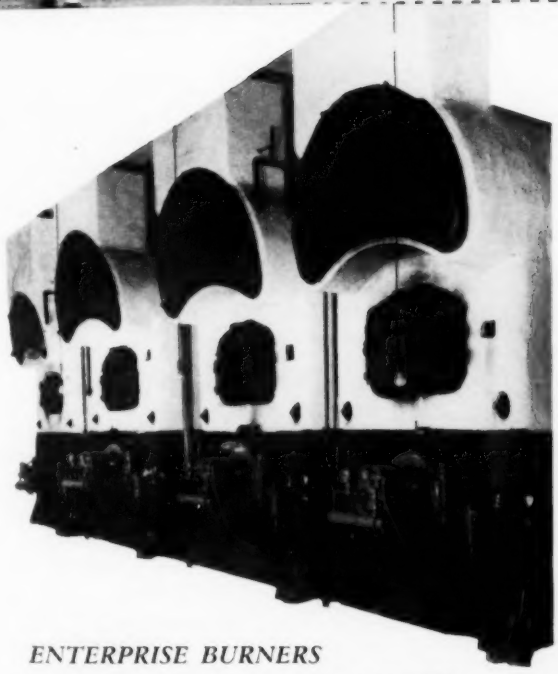
The principles of solar orientation will be utilized in the construction of a new 6-story administration building for the American Stove Co., manufacturer of Magic Chef gas ranges, in St. Louis. Harris Armstrong of Kirkwood, Mo., is

(*Continued on page 15*)

LEADER . . . in Economy Flexibility . . . Cleanliness



Brooklyn Public Library at Grand Army Plaza, Brooklyn, N. Y. Inset, view of the Boiler Room, showing ENTERPRISE Oil Burner installation made by Enterprise Engineering Co., Inc., of N. Y.



ENTERPRISE BURNERS are available in sizes from 12-650 BHP, 4-200 Gal Per Hr for manual, semi-automatic, and fully automatic operation; with modulating or special combinations of fire control for your specific requirement.

Heavy fuel oils yield up to 15% more heat when correctly burned than do the lighter oils, yet cost from 25-50% less. This economy is achieved by ENTERPRISE ROTARY BURNERS mixing the heaviest oils with correct air quantities so that a highly combustible fog is blown into the fire box.

The cleanliness and flexibility of fuel oil, as compared with other fuels, reaches its peak when ENTERPRISE ROTARY BURNERS are used. After initial adjustment little further attention is required! ENTERPRISE BURNERS are unexcelled in their adaptability to fully automatic instantaneous heating.

Four fully Automatic ENTERPRISE BURNERS installed over 6 years ago in the Brooklyn Public Library "have given . . . excellent service and we are entirely satisfied" according to Chief Librarian James Ferguson.

COMBUSTION EQUIPMENT DIVISION

ENTERPRISE

ENGINE and FOUNDRY CO.

18th and FLORIDA STS. SAN FRANCISCO, CALIF.

DISTRIBUTORS IN PRINCIPAL CITIES

These Magazines know what Women want



WOMAN'S HOME COMPANION survey shows that more women plan to buy an Electric Range than *any other type!*



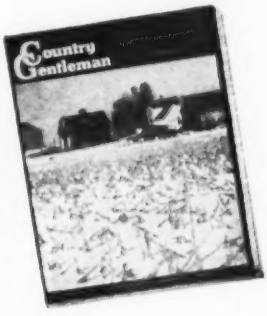
McCALL'S MAGAZINE readers have made the Modern Electric Range their 2-to-1 "must have" choice in a recent contest.



SUCCESSFUL FARMING survey shows that nearly twice as many REA customers will own an Electric Range *after the first two postwar years* as now have one.

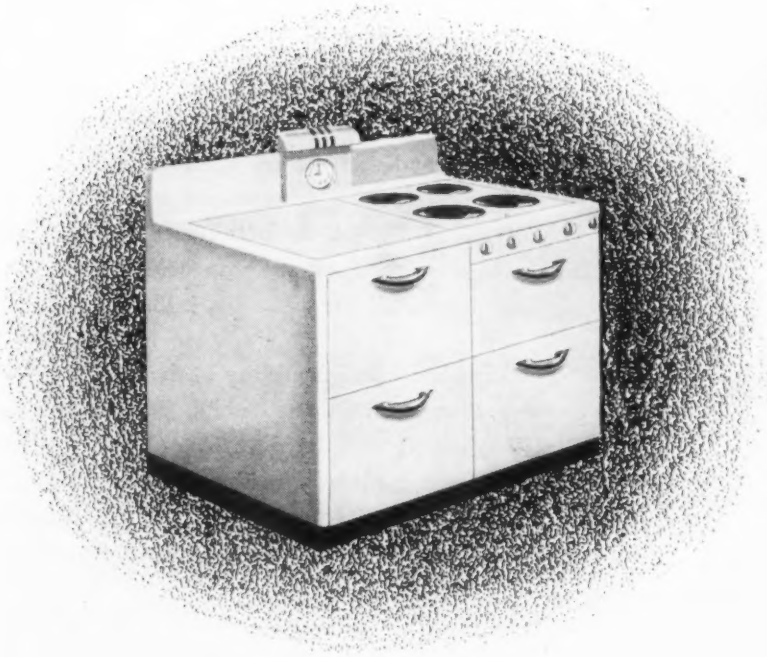


HOUSEHOLD MAGAZINE survey indicates that 3 times as many women want Electric Ranges as "now have" them.



COUNTRY GENTLEMAN survey shows that among the upper two-thirds of white farmers, the Electric Range is the 2-to-1 choice!

Their Surveys show the swing is to



Electric Ranges

Leave it to the magazines to find out what their readers want. Survey after survey shows that women *prefer* the convenience, cleanliness, dependability and economy of *modern* electric cooking!

Pre-war sales figures add further proof to this trend. Between 1933 and 1941, sales of Electric Ranges increased over 900%!

There are no two ways about it—to cash in on this growing demand, you must wire the new homes you build for Electric Ranges. Built-in, the cost of such wiring is negligible, but the selling power is tremendous!

Electric Range Section
NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
155 E. 44th Street, New York 17, N. Y.

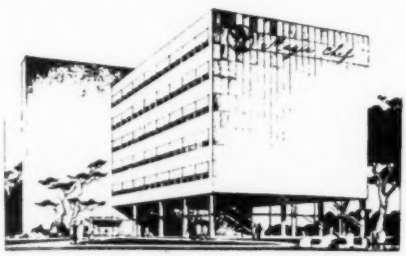
A-B STOVES • ADMIRAL • ELECTROMASTER • ESTATE HEATROLA • FRIGIDAIRE • GENERAL ELECTRIC • GIBSON • HOTPOINT • KELVINATOR • MONARCH • NORGE • QUALITY • UNIVERSAL • WESTINGHOUSE

FOR EASIER SALES

wire your houses

FOR ELECTRIC RANGES





Administration building for American Stove

the architect for the new building, Neal J. Campbell the design engineer, and Ferris and Hamig are the mechanical engineers.

So placed that the entire north wall will be free from direct sun rays from 9 a.m. to 5 p.m. during midsummer days, the building will feature large areas of unshaded glass in that wall to provide a high degree of natural diffused daylighting. In the south wall the glass will be of a new type that bends the sun's rays to the ceiling. Windows will be of permanently sealed, double-insulating plate glass. A novel feature will be permanent window washing equipment consisting of a car suspended from the roof by cables.

To leave the major expanse of floor space open, heating and air conditioning equipment will be in stacked arrangement at one end of the building, with individually controlled units for each floor. Interior partitions will be built of prefabricated steel panels, 4 by 10 ft. in size, interchangeable to permit office space to be altered easily and quickly as requirements may dictate. The entire ground floor will be a showroom and entrance lobby with window walls.

All lights will be recessed to ceiling surface. Lighting units and ceiling panels will be of modular design and interchangeable at will to conform with the rearranging of office partitions. Radiant heating will be delivered into the rooms through acoustical tile which will perform the double service of absorbing noise and radiating heat. Coils of the heating system will be in the utility stacks at the end of each floor, and replacement air will be brought in by electronic filters.

Addition Started

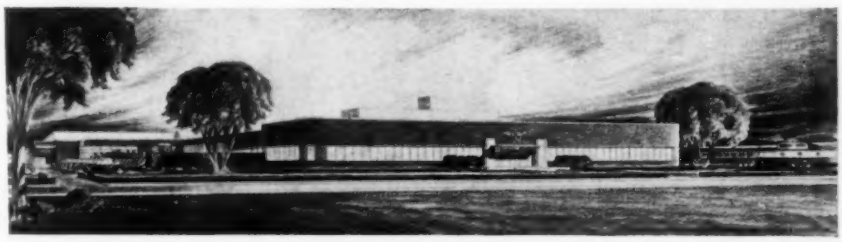
Construction has been started on a $500,000 addition to the Racine, Wis., plant of the Modine Mfg. Co., to provide enlarged facilities for production, engineering and administration.

The new building, to be joined to the south end of the present plant, will increase the floor area by approximately 65,000 sq. ft. It will be of one-story construction, with an 185-ft. frontage. In addition to the production areas, it will house administrative and engineering offices, experimental laboratories, drafting and tool rooms, the printing department and a cafeteria. Zone controlled air conditioning, sealed thermopane windows, acoustic ceilings and fluorescent lighting are specified. Graham, Anderson, Probst and White, of Chicago, are the architects.

Plant Completed

The new plant of the Reynolds Spring Company at Trenton, N. J., has been completed by Walter Kidde Constructors, Inc., New York, engineers and contractors.

The one-story structure is characterized by a large expanse of window and, except for the office section, no parapet above the window sash (the sash is carried up to the eaves) to assure maximum light. Over 100,000 ft. in area, it is a wide building, laid out with a minimum of obstructions for straight line production. The steel frame building has an insulated steel roof deck, steel sash and brick walls, concrete floor construction.



Construction has been started on a one-story addition to Modine Mfg. Co.'s Racine plant



Entrance to the new Reynolds Spring plant

Growing Demands

point to GREATER SALES

293%

142%

100%

1935 1938 1941

Postwar Sales Will Triple Again

In the 6 prewar years, sales of Electric Water Heaters almost tripled. And a 1944 survey made for NEMA* shows that three times as many women want Electric Water Heaters as now have them! They're "what women want," because they're:

SAFE—Flameless, fumeless

CLEAN—Smokeless, sootless

ADAPTABLE—Permit short hot water lines—Require no flue or vent

TROUBLE-FREE as electric light

ECONOMICAL—The cost is low for plenty of hot water all the time.

Installing Electric Water Heaters in every house you build, means giving women *what they want!*

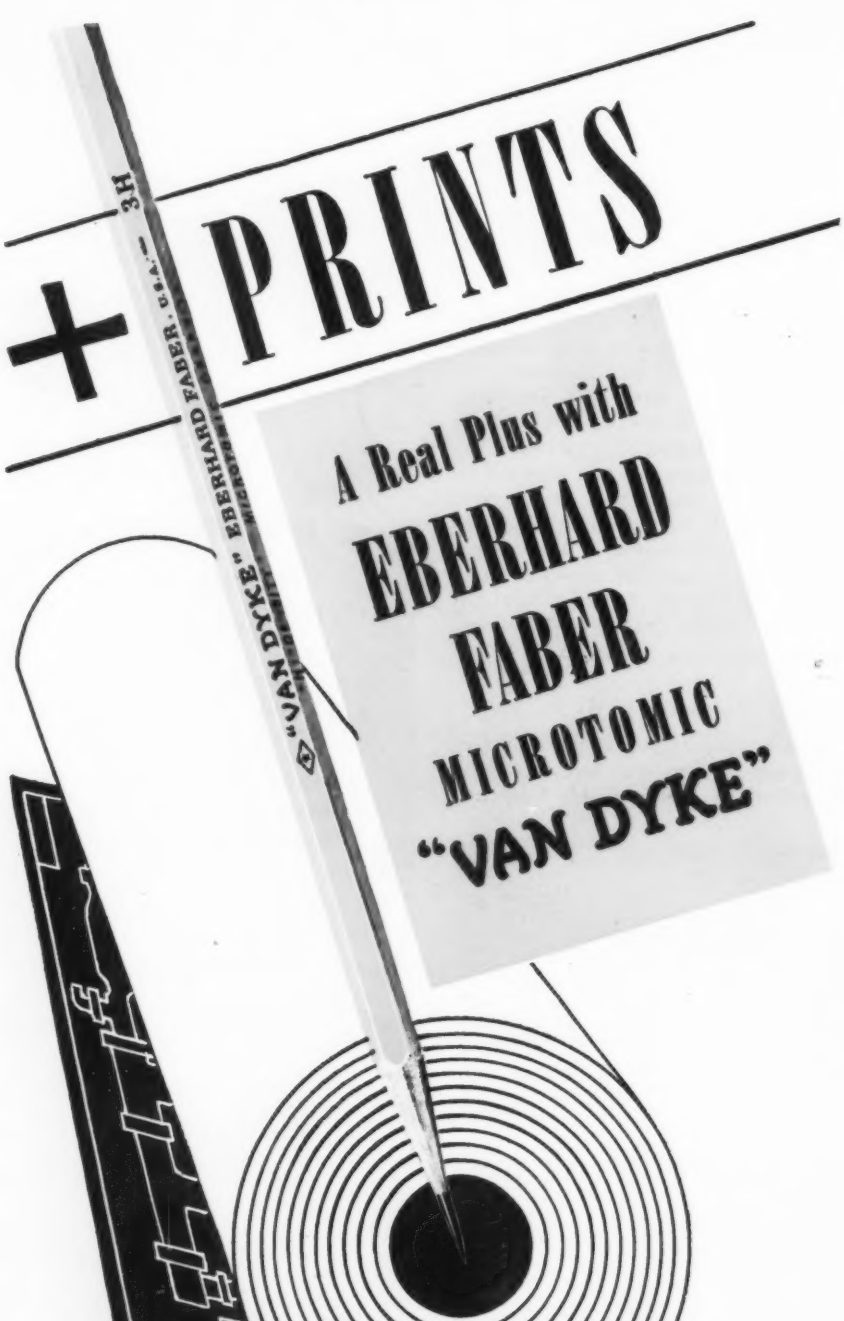
Electric Water Heater Section
*NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION

ADMIRAL • B&F • CLARK • ELECTROMASTER • FOWLER • FRIGIDAIRE • GENERAL ELECTRIC • HOTPOINT • HOTSTREAM • KELVINATOR • MONARCH • NORGE • PEMCO • REX • RHEEM • SELECTRIC • SMITHWAY • THERMOGRAY • THERMO-WATT • UNIVERSAL • WESTINGHOUSE

A House Wired For An Electric Range Is Already Wired For An

Electric

WATER HEATER!



CLEAR-CUT CLARITY of reproduction, even in the finest of detailed lines, comes naturally from the plus degree of opacity which HI-DENSITY Lead imparts to pencil tracings. It is this outstanding betterment, added to the draftsman's ideal of unvarying uniformity of grading, that makes MICROTOMIC "VAN DYKE" a pencil worthy of your trust. Available at accredited dealers from coast to coast.

Choice of 18 degrees from 7B to 9H with Round Leads—plus 6 Degrees with special Chisel Point Leads.

THE RECORD REPORTS

(*Continued from page 10*)

Price increases became effective in March and April also on various other building items, including an average of 9 per cent on hardwood flooring, 6 per cent on Ponderosa pine cut stock for doors and windows; 10 per cent on builders' hardware, 11 per cent on about 40 cast iron plumbing drainage staples, 30 cents per square on western softwood shingles, and $2 per thousand on sand lime building brick.

Remodeling Pushed

The FHA is working on a broad cooperative program among communities, dealers and lenders to stimulate home remodeling as a means to get housing for veterans with top speed and low cost. The drive is proceeding on the basis that many cities have dwellings which can provide one or more income-producing apartments, that large apartments can be divided into numerous modern small units, and that warehouses, business and other structures can be converted into living space.

Property owners, under FHA's "Remodel for Veterans" program, may obtain loans up to $5,000 for terms up to seven years.

On a more permanent basis, Commissioner Raymond M. Foley's FHA has established an urban redevelopment unit with a view to participation in "the rehabilitation of American cities." Some cities have asked FHA to aid in planning redevelopment programs.

A survey of advance planning for public works, requested of the Federal Works Agency by the Senate Small Business Committee, shows that up to the end of 1945 plans had been completed by the states and their subdivisions for public works totaling almost $1 billion. Sixty-six per cent of the cities and towns under 50,000 in population reported no plans, and less than half of the $30,000,000 appropriated by Congress for advances to state and local governments for such planning had been disbursed.

Airports to be Aided

In finally agreeing upon a combined draft of the Federal Airport Bill, House and Senate conferees worked out a compromise which changes the total for aid to airports to $500 million extending over seven years beginning this June 30. Provision is made for the federal government to share half of allowable project costs in the case of Class 3 or smaller airports and such portion as the Administrator may deem appropriate (not exceeding 50 per cent) in the case of Class 4 or larger airports.

The measure directs the Administrator of Civil Aeronautics "to prepare, and

(*Continued on page 18*)



Builder Brown was Baffled . . . .

BUT ONLY FOR A MOMENT

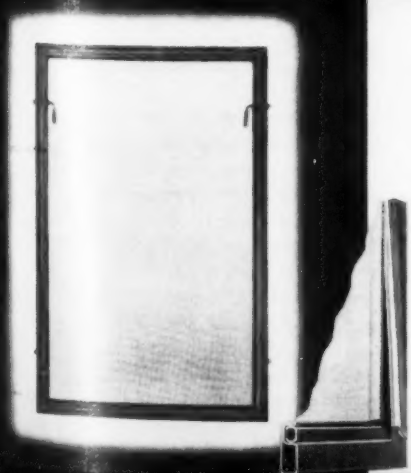
With the architect and contractor, he turned to Ceco . . . Together they solved the problem

Builder Brown was constructing a plant which called for special types of metal screens. But these required special rolling equipment and dies that were not available. It looked tough—until he turned to Ceco. Out of their engineering know-how, they suggested certain changes using standard Ceco construction. The contractor and architect approved. Better results were achieved—40% of cost was saved—and the job was completed ahead of schedule.

MATERIALS HARD TO GET? CECO CAN GIVE YOU PROMPT, EARLY DELIVERY ON METAL SCREENS

For every purpose — every building — every opening — Ceco has the right screen. Not just one type, but every type needed for new buildings or replacements — for wood windows or metal. No job is too large or small — no problem too difficult. Hard-to-screen openings are a specialty . . . Ceco screens in steel, bronze and aluminum are available NOW for all buildings including RESIDENTIAL.

READ THESE OUTSTANDING ADVANTAGES OF CECO METAL SCREENS



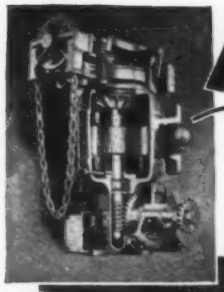
1. Standard types and styles for every purpose.
2. Cost no more than ordinary screens . . . factory finished . . . no on-the-job painting, trimming or fitting.
3. Easy to install, remove and re-install.
4. Will not warp, shrink, swell, twist or rot.
5. Custom built from steel, bronze or aluminum.
6. Wired with rustproof, clear-vision screen cloth.

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Concrete Engineering Division,
Merchant Trade Division, Highway Products Division
Offices, Warehouses and Fabricating Plants in Principal Cities

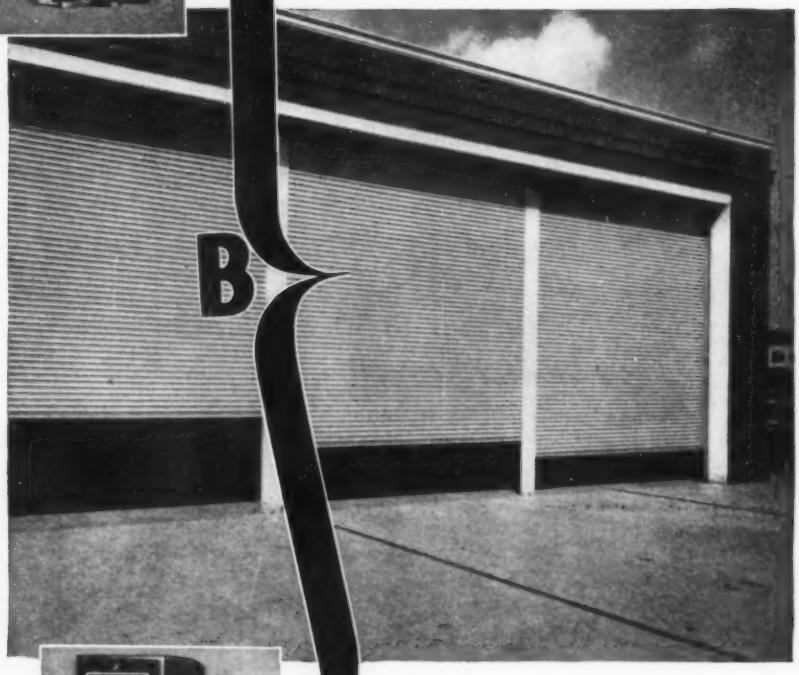
A Partial List of Other CECO Products

Metal Windows and Doors
Metal Weatherstrips
Steel Joists, Steel Roof Deck
Metal Lath
Reinforcing Steel
Highway Products
Double-Drain Roofing

In construction products **CECO ENGINEERING** *makes the big difference*



THE ABC's of DOOR EFFICIENCY





A—The Kinnear Motor Operator saves effort, time, and manpower. It goes into action instantly at the touch of a control button—opening, closing, or stopping the door with smooth speed and efficiency. It's a sturdy, integral unit featuring a specially designed torque-output motor, machine-cut gears, and bronze bushings that assure lasting, trouble-free operation.

B—The same bull-dog ruggedness and high operating efficiency are featured in the sturdy, all-steel, interlocking-slat construction of Kinnear Rolling Doors. Coiling into small space above the lintel, Kinnear Doors permit full use of *all* floor and ceiling space around doorways, remaining out of the way and safe from damage when open. These and other basic advantages have made Kinnear a first choice for nearly half a century!

C—Remote Control adds still further convenience and economy by permitting more strategic placing of control buttons, or centralized control stations for any number of doors. It helps eliminate doorway "bottlenecks," and cuts heating and air-conditioning costs by encouraging prompt door closure at all times. Remote control assures maximum advantages from the smooth, easy, time-saving action of Kinnear Motor Operated Rolling Doors.

Write today for complete information on the ABC'S of dependable door satisfaction at its best.

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Offices and Agents in all Principal Cities

KINNEAR ROLLING DOORS

Saving Ways in Doorways

THE RECORD REPORTS

(*Continued from page 16*)

revise annually, a national plan for the development of public airports in the United States," including Alaska, Hawaii and Puerto Rico. It authorizes $3,000,000 for preliminary planning and surveys "incident to the initiation of the airport program."

BUILDING GAINS

Residential building mounted steadily in the 37 states east of the Rocky Mountains in February, F. W. Dodge Corp. reports. The month's dollar volume of contracts awarded, amounting to $102,079,000, was the highest peacetime February residential total since 1929. The volume was 14 per cent higher than January, and 426 per cent higher than February a year ago.

While the gains in residential construction were most pronounced, increases of 1 per cent in nonresidential construction over January and 130 per cent over February, 1945, were also reported.

The total for the first two months of 1946, for all construction contracts awarded in the states east of the Rockies, was $744,900,000, a gain of 159 per cent over the corresponding two months of last year.

SUPPLY SITUATION

Enough Brick, Tile

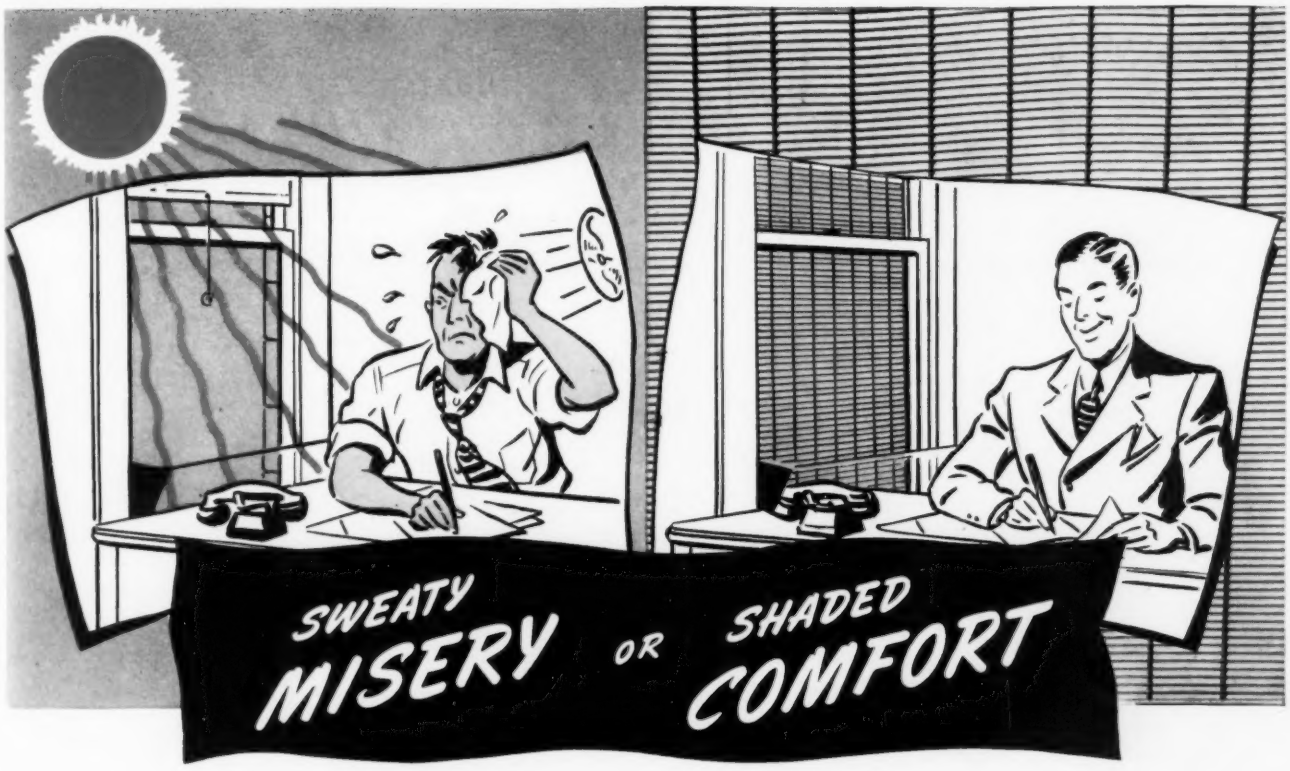
The production of brick and tile this year should be sufficient to meet the full requirements of the Wyatt housing program and to permit an important volume of industrial and commercial building, together with essential public works, according to J. Ernest Fender, president of the Structural Clay Products Institute. Production is expected to exceed 7 billion brick equivalents, 17 per cent above 1941 output and 133 per cent greater than 1945 production. The Wyatt program would require about 2.8 billion brick equivalents, including 193,000 tons of structural clay tile.

Timetable Offered

A new supply timetable indicating when the end of current material shortages may be looked for, has been published by the New York Journal of Commerce as an aid to industry's long and short term planning. Improved supplies of copper, sugar and rubber are already in the making, according to the timetable, but acute shortages of lead, tin and building materials continue in effect with steel, paper, leather, industrial textiles and floor coverings not far behind.

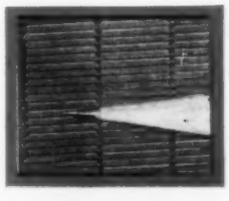
The various factors influencing the supply situation in 21 basic raw materials are brought up to date in this new study. The probable end of acute scarci-

(*Continued on page 144*)



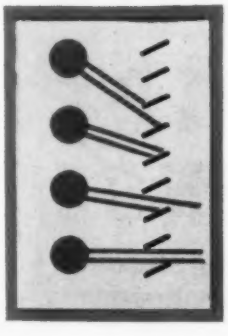
Specify KOOLSHADE* SUN SCREEN

For Cooler Comfort in Every Sun-Exposed Room!



WHAT IT IS

KoolShade is—in effect—an outside miniature venetian blind. The paper-thin bronze "slats" are permanently set at a 17 degree slant. Light rays flood in . . . you can see out clearly . . . but the sun's heat rays are stopped *outside*.

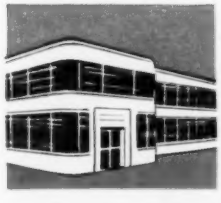


WHAT IT PREVENTS

Sun heat rays pouring through windows cause up to 75% of room heat. Glass does not stop them . . . it does resist radiated heat. Heat rays pour in . . . accumulate. Result . . . a sweaty heat trap.

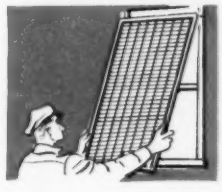
WHAT IT DOES

KoolShade blocks, reflects, absorbs and radiates up to 90% of the sun's heat rays . . . outside the window. Keeps rooms as much as 15° cooler.



FITS MODERN DESIGN

KoolShade fits neatly, smoothly into modern architectural design, giving shaded comfort to sun-exposed rooms. There are no ungainly protrusions . . . no breaking of streamlined effects, when you specify KoolShade Sun Screen.



ECONOMICAL INSTALLATION AND UPKEEP

KoolShade installs as easily and inexpensively as common insect screen . . . upkeep is negligible because it will not rust, rot or rattle. This bronze screen gives long, trouble-free service.

EXTRA PLUS VALUES

+ *Permanently adjusted for greatest efficiency.*
+ *Prevents fading of drapes and furnishings.*
+ *Completes insulation—aids air-conditioning.*
+ *It also serves as an effective insect screen.*

FOR FREE SAMPLE AND LITERATURE, TEAR OUT AND MAIL THIS COUPON

Ingersoll

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Every architect knows that a reliable piping system for plumbing and heating is one of the most important factors in the building. It is a surprising fact that a great deal of thought and money is frequently spent on outward appearances, while vital matters are quite often taken for granted. Of course, the home should be modern in design, its kitchen, bathroom and laundry fixtures should be handsome and conveniently located... but unfortunately, good looks do not assure good service.

The efficiency of these modern fixtures and the very livability of the home itself depend upon a permanently reliable piping system for the plumbing and heating—in a word —A STREAMLINE COPPER PIPE AND FITTINGS SYSTEM.

STREAMLINE

TRADE MARK REG. U. S. PAT. OFFICE

COPPER PIPE AND FITTINGS

STREAMLINE Copper Pipe connected with STREAMLINE Fittings assures a piping installation that incorporates maximum resistance to rust, clogging and vibration. It affords a permanently reliable conducting system that insures efficient service from fixtures and radiating units year in and year out. With the possible exception of abnormal water conditions, STREAMLINE will outlast the building in which it is installed.

When you include STREAMLINE Copper Pipe and Fittings in your postwar specifications, you are actually providing future insurance of comfort and convenience for the building.

Between the Seasons



Spring and Fall have many chilly days and evenings, too, that need just a little *Extra Heat*. That's when the Ⓕ Electric QUIKHETER proves its worth in delightful warmth . . . filling an average room in just a few minutes.

Best of all, the Ⓕ QUIKHETER has no moving parts to wear out, and a genuine Nichrome element that should *never* burn out under normal operating conditions. Built into the wall it takes no floor space and eliminates the hazards of exposed cords.

It costs no more than many portable models, yet lasts a lifetime. Separate control switch* locates high on the wall, away from children's inquisitive fingers, where you can reach it without stooping.

The Ⓕ QUIKHETER is an *auxiliary* electric heater providing *extra* warmth for the morning shower, baby's bath, drying hair, and chilly mornings before the regular heating system is started.

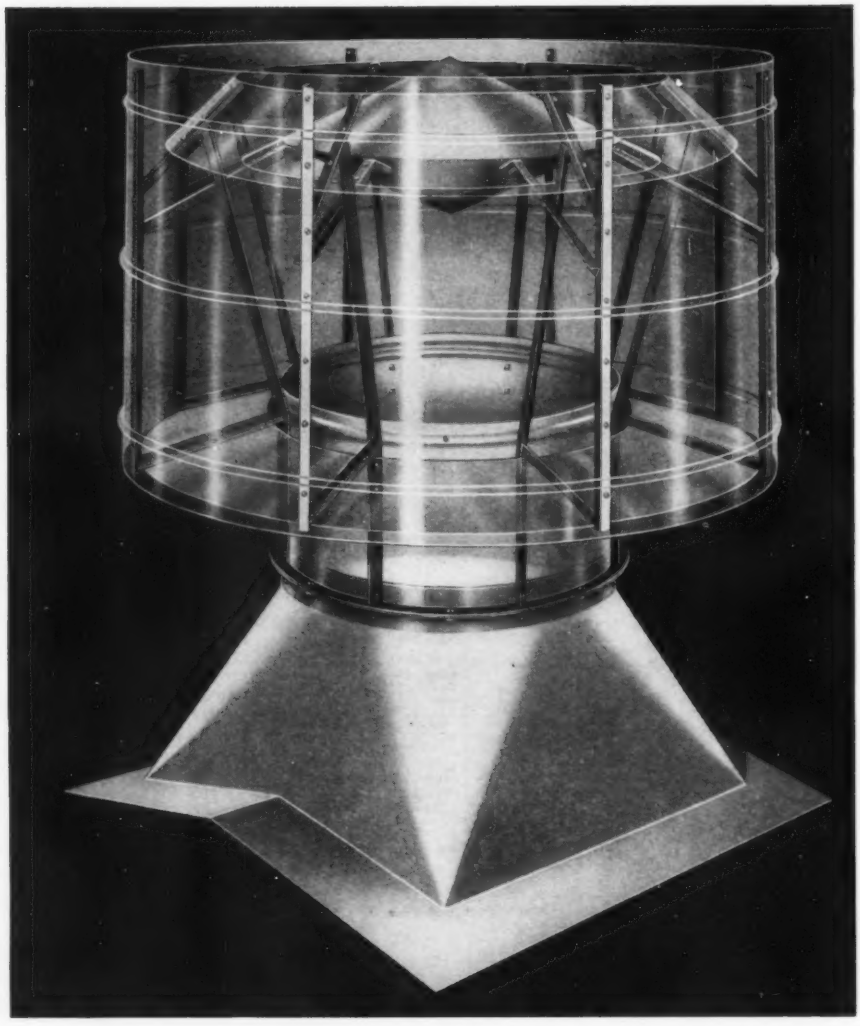
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BOECKH INDEXES OF CONSTRUCTION COSTS ARE BACK FROM WAR

Last month the RECORD began again, after a wartime lapse, the Boeckh figures on construction cost, now in table form instead of the charts as formerly. The tables go back to 1913 and give all significant cost movements to date. The background table is reproduced again this month, for those who may have missed it, with latest figures added. The index numbers will appear from time to time in the RECORD, when the new figures show significant changes. March figures show substantial increases over those of February; if changes come this fast they will bear watching in the future.

The index numbers shown are for combined material and labor costs. The indexes for each separate type of construction relate to the United States average for 1926–29 for that particular type — considered 100.

Cost comparisons, as percentage differences for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.:

index for city A = 110
index for city B = 95

(both indexes must be for the same type of construction).

Then: costs in A are approximately 16 per cent higher than in B.

$$\frac{110-95}{95}=0.158$$

Conversely: costs in B are approximately 14 per cent lower than in A.

$$\frac{110-95}{110}=0.136$$

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926–29.

Material prices and wage rates used in the current indexes make no allowance for payments in excess of published legal prices, thus, indexes reflect minimum costs and not necessarily actual costs.

CONSTRUCTION COST INDEXES — Labor and Materials

United States average 1926—1929=100

Compiled by Clyde Shute, manager, Statistical and Research Division, F. W. Dodge Corporation, from data collected by E. H. Boeckh & Associates, Inc.

NEW YORK

Period	Residential		Apts., Hotels, Office Bldgs.	Commercial and Factory Buildings	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1913	57.9	59.5	53.9	53.7	53.2
1914	57.4	59.1	53.3	54.6	53.1
1915	56.0	57.6	52.5	53.1	51.8
1916	64.5	65.9	62.3	62.1	69.0
1917	75.3	77.6	73.2	72.3	83.9
1918	85.8	87.7	82.2	83.1	89.2
1919	99.0	100.5	92.0	91.6	93.6
1920	136.1	136.9	123.3	123.6	122.6
1921	109.8	109.8	101.3	103.5	100.1
1922	109.5	109.5	99.0	100.1	96.3
1925	121.5	122.8	111.4	113.3	110.3
1930	127.0	126.7	124.1	128.0	123.6
1935	93.8	91.3	104.7	108.5	105.5
1939	123.5	122.4	130.7	133.4	130.1
1940	126.3	125.1	132.2	135.1	131.4
1941	134.5	135.1	135.1	137.2	134.5
1942	139.1	140.7	137.9	139.3	137.1
1943	142.5	144.5	140.2	141.7	139.0
1944	153.1	154.3	149.6	152.6	149.6
1945	160.5	161.7	156.3	158.0	155.4
Jan. 1946	173.1	173.7	169.8	170.4	167.0
Feb. 1946	173.1	173.7	169.8	170.4	167.0
Mar. 1946	174.9	175.6	172.1	172.9	169.0
	% increase over 1939				
Mar. 1946	**41.6**	**43.4**	**31.7**	**29.6**	**29.9**

ATLANTA

Period	Residential		Apts., Hotels, Office Bldgs.	Commercial and Factory Buildings	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1913	42.1	41.2	43.3	43.0	44.3
1914	40.6	39.5	42.2	42.1	43.4
1915	42.1	41.0	43.3	43.8	43.7
1916	47.6	46.0	52.6	53.8	57.6
1917	55.3	54.4	63.7	63.9	74.4
1918	71.9	71.3	74.6	75.4	80.7
1919	92.1	93.3	85.6	85.7	88.9
1920	122.8	122.9	108.6	109.8	105.7
1921	84.4	85.1	81.9	84.0	76.8
1922	82.2	83.4	79.6	80.6	74.6
1925	86.4	85.0	88.6	92.5	83.4
1930	82.1	80.9	84.5	86.1	83.6
1935	72.3	67.9	84.0	87.1	85.1
1939	86.3	83.1	95.1	97.4	94.7
1940	91.0	89.0	96.9	98.5	97.5
1941	97.5	96.1	99.9	101.4	100.8
1942	102.8	102.5	104.4	104.9	105.1
1943	109.2	109.8	108.5	108.1	108.7
1944	123.2	124.5	117.3	117.2	118.2
1945	132.1	133.9	123.2	122.8	123.3
Jan. 1946	137.9	138.4	127.4	127.3	127.0
Feb. 1946	140.8	142.6	130.4	128.9	128.9
Mar. 1946	141.2	143.0	133.6	129.3	129.3
	% increase over 1939				
Mar. 1946	**63.7**	**72.0**	**40.5**	**32.8**	**36.6**

ST. LOUIS

Period	Residential		Apts., Hotels, Office Bldgs.	Commercial and Factory Buildings	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1913	60.9	62.6	56.7	57.6	54.7
1914	59.4	61.1	54.4	54.7	53.4
1915	60.9	62.1	56.9	58.6	55.1
1916	58.9	58.8	62.6	62.8	70.1
1917	65.5	69.7	71.7	71.5	81.3
1918	85.7	88.4	82.5	82.7	89.1
1919	93.4	95.0	91.4	91.6	93.8
1920	118.1	121.1	112.1	110.7	113.1
1921	111.5	113.3	105.0	106.7	103.2
1922	98.4	98.1	96.2	97.4	93.9
1925	118.6	118.4	116.3	118.1	114.4
1930	108.9	108.3	112.4	115.3	111.3
1935	95.1	90.1	104.1	108.3	105.4
1939	110.2	107.0	118.7	119.8	119.0
1940	112.6	110.1	119.3	120.3	119.4
1941	118.8	118.0	121.2	121.7	122.2
1942	124.5	123.3	126.9	128.6	126.9
1943	128.2	126.4	131.2	133.3	130.3
1944	138.4	138.4	135.7	136.7	136.6
1945	152.8	152.3	146.2	148.5	145.6
Jan. 1946	157.7	158.3	150.8	152.6	149.5
Feb. 1946	157.7	158.3	150.8	152.6	149.5
Mar. 1946	158.8	159.5	151.1	152.8	149.9
	% increase over 1939				
Mar. 1946	**44.1**	**49.0**	**27.3**	**27.6**	**26.0**

SAN FRANCISCO

Period	Residential		Apts., Hotels, Office Bldgs.	Commercial and Factory Buildings	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1913	55.1	51.7	63.8	67.8	64.4
1914	54.1	50.7	61.6	66.0	59.4
1915	54.6	51.1	62.5	67.5	59.8
1916	57.5	54.1	67.6	70.1	73.9
1917	65.6	63.0	77.2	78.1	94.6
1918	78.3	76.6	85.8	87.4	94.3
1919	89.2	87.8	96.7	98.5	102.2
1920	108.8	107.5	115.2	115.1	122.1
1921	93.8	89.5	102.3	105.6	103.8
1922	91.5	88.3	97.1	100.5	95.6
1925	91.0	86.5	99.5	102.1	98.0
1930	90.8	86.8	100.4	104.9	100.4
1935	89.5	84.5	96.4	103.7	99.7
1939	105.6	99.3	117.4	121.9	116.5
1940	106.4	101.2	116.3	120.1	115.5
1941	116.3	112.9	120.5	123.4	124.3
1942	123.6	120.1	127.5	129.3	130.8
1943	131.3	127.7	133.2	136.6	136.3
1944	139.4	137.1	139.4	142.0	142.4
1945	146.2	144.3	144.5	146.8	147.9
Jan. 1946	148.6	146.4	146.7	148.3	149.3
Feb. 1946	150.6	147.7	149.2	151.1	150.3
Mar. 1946	154.0	153.0	151.8	151.8	152.3
	% increase over 1939				
Mar. 1946	**45.8**	**54.1**	**29.3**	**24.5**	**29.8**

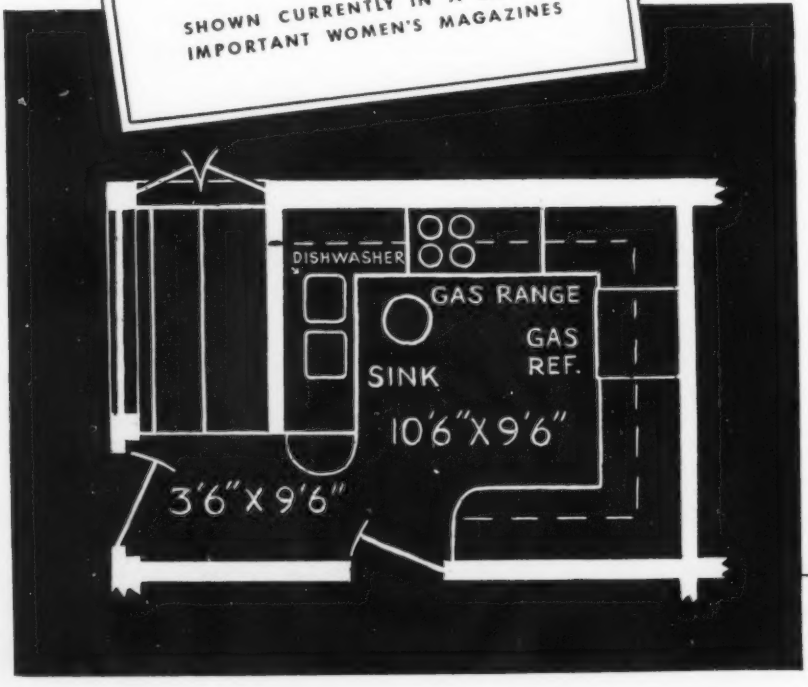
It's the most important room



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in the house—to a woman!

WOMEN spend a larger proportion of their waking hours in the *kitchen* than in any other part of the house. So it's only natural that they should show tremendous interest in the subject of kitchen planning . . . have distinct ideas as to what their "dream kitchen" should look like. Recently, we interviewed a large number of women about the "New Freedom Gas Kitchen" design shown at the left. As architects and builders, you will be interested in their comments.

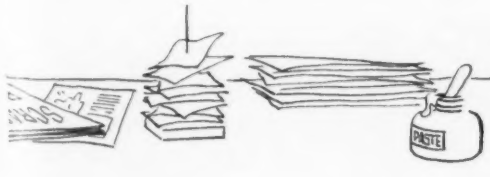
HERE ARE SOME OF THEIR STATEMENTS:

"This is the most compact and workable kitchen I've seen yet."
"It's so livable and pleasant." "The dining nook is mighty handy."
"Nothing is out of reach." "I like the sink and dishwasher combination." "The colors are so inviting and cheerful." "You could spend a lot of time in this kitchen and still feel happy."

Best of all—*this kitchen is operated by Gas*—the cooking fuel preferred by more than 20 million urban and suburban homes. Women who have used Gas ranges are sold on the advantages of flame cooking. They praise the speed, flexibility and automatic features of Gas, say it "cooks faster, better, more thriftily". . . agree that nothing equals the flame for *flavor.* And they like the long-life dependability of Gas refrigerators, too . . . appreciate the fact that there are no moving parts in the freezing unit to wear out or make a noise. Undoubtedly, in the homes you plan and build, you will want to recommend Gas equipment for cooking, refrigeration, water heating, house heating and year 'round air conditioning. Your local Gas Company will be glad to supply you with complete technical details on modern Gas practice. AMERICAN GAS ASSOCIATION



NOW READY! For further information on this invaluable builders' and architects' manual, write: American Gas Association, 420 Lexington Ave., New York 17, N. Y.



REQUIRED READING

FABULOUS FATHER

My Father Who Is on Earth. By John Lloyd Wright. New York (2 W. 45th St.), G. P. Putnam's Sons, 1946. 5½ by 8½ in. 194 pp. illus. $3.50.

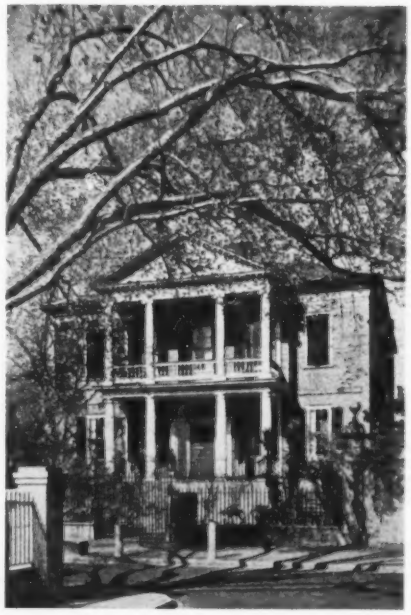
Any biography of Frank Lloyd Wright, no matter by whom it is written, must of necessity make interesting reading. For that's the sort of life the irrepressible and brilliant Mr. Wright still is very busy living. But here is a biography of exceptional interest — an intimate account by one who knew him not only as a parent, but also as an instructor and an employer.

John Lloyd Wright has chosen to write in a style as open and unconstrained as his father's concept of design — and of living. It is just a little too much on the "wise-guy" side of the fence, perhaps, and quite definitely overdone in spots. It is, frankly, rather like the work of a rebellious architect who is determined to break with tradition come hell or high water, even though he has no reason to do so. The short sentences, one-line paragraphs, etc., are as deliberately affected as Papa Wright's bow tie and flowing cape. Yet through it all comes a deeply sincere, affectionate and vibrant picture of both man and architect. Wright's puckish ways, his incredible egocentricity, are if anything emphasized rather than ignored. They should be, too, for they are in large part the traits which have endeared him to more people than his son.

The father seems to have been quite as unconventional as the architect. As the son says, "He performed all the functions of fatherhood, only he performed them differently." Come Christmas, he trimmed the tree and played with the toys in traditional style, but as the children grew up, he began to "feature" certain things each year: one year it was Oriental rugs, another, bicycles, and still another, musical instruments. He bought horses for his children, and a car. And then one night he took the car and just kept on going.

Of his father's legal and illegal cohabitings, son John is understanding. He doesn't in the least blame his wayward parent for leaving home. "I often wonder now," he says mildly, "why he didn't leave sooner." Wholly without rancor, he puts no undue emphasis on this part of his subject's life, but neither does he skirt the edges of the story in familial embarrassment.

When young John decided to become an architect, he presently found his way into his father's office. He loved everything about it — except the total impossibility of collecting his salary. His prodigious father would buy him lavish meals, give him access to his clubs, tuck



Miles Brewton House, Charleston (1769). From "The Architects of Charleston"

$20 bills into his pocket occasionally — and just keep on promising him his salary. The man's money habits were appalling. One day, faced by the closing of his office by a sheriff determined to collect a debt or else, the enterprising Mr. Wright sold a rare set of wood-block color prints from his collection, took John and made the rounds, paying off all his debts. Then, with John still in tow, he went on a spending spree. He bought a dozen $125 chairs, a dozen Chinese rugs, and ordered three concert grand pianos before he was through! Then, safely in debt again, he was happy. The father-son business relationship came to an abrupt end some time later when John, after collecting $2,000 for his father, deducted $1,200 of it for salary due him and handed on the balance. He was fired with breathtaking promptness. He never worked for his father again.

Of the architect and his methods of working, John has much to say. In a short chapter called "Genius at Work," he tells of the building of Midway Gardens in Chicago, of his father, in less than an hour's drawing, like a magician pulling a rabbit out of a hat, producing the entire design conception of the block-square Gardens.

"Designers like Dad," he says in a later chapter, "recognize the spiritual source that transcends any earthly formula or logic." If you ask Frank Lloyd Wright to build you a chicken coop, he continues, "you think of a logical house for chickens, but not Dad. He hears the cock crow, the hen cackle. He sees the hen laying eggs. He tastes eggs with ham, eggs with bacon, eggs with sausage — eggs scrambled souffled boiled fried and poached. He smells the aroma of steaming coffee. He feels the joy of living. Now he is ready to build. He weaves a romance around the gullibility of the chicken and the chicanery of the human being — and you get the Coup of Coops in which every chicken lives a better life on its own plot of ground."

Yes, John Lloyd Wright has done well by his father. This is no ordinary biography, but an intimate reminiscence of a man, "a rebel, a jolt to civilization, whose romantic theme — purposive planning, and organic unity in inventing and combining forms — is an epoch in the architecture of the world."

BEHIND THE SCENE

Architects of Charleston. By Beatrice St. Julien Ravenel. Charleston, S. C., Carolina Art Assn., 1945. 6½ by 9¾ in. xvi + 330 pp. illus. $5.00.

Through all of history, architecture has held the spotlight while its creators have been relegated largely to back seats. The characteristics, the charm, the beauty of Charleston buildings, for example, have been described and redescribed so often that they are thoroughly familiar, but little has been written of the men who built them. Now for a welcome change comes a book devoted exclusively to those men.

Miss Ravenel has delved deeply into old records of Charleston to uncover the stories she recounts here. Naturally enough, very little could be learned of the builders of the early half of the 18th century, and nothing at all of those whose work dated before 1700. Those men whose names can be connected with some degree of accuracy with specific buildings are generally referred to as bricklayers, joiners or supervisors. Some of them, however, may well have drawn their own plans.

Charleston's first architect, says Miss Ravenel, may have been one Samuel Holmes, who in 1733 advertised himself as a bricklayer who "if required draws Draughts of Houses, and measures and values all sorts of Workmanship in Houses or Buildings." One John Wood, however, seems to have been the first person in the city to be given the title *architect* — and that in connection with the sale of his effects following his death. His property included a "Draw[s] board T.s & bevil."

The master builder, and possibly the architect, responsible for St. Michael's Church, on Meeting Street, built 1752–1761, was Samuel Cardy, who definitely is known to have been the architect of a lighthouse at the entrance to Charleston Harbor. One of the builders, and possibly the architect, of the old Watch House or guard house, built 1767–69,

(*Continued on page 28*)



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REQUIRED READING

(*Continued from page 26*)

was William Rigby Naylor, who in 1772 advertised that he would "instruct in the Art of Drawing Architecture." Interestingly, his wife was the daughter of Samuel Cardy.

On the background and work of the later architects Miss Ravenel has dug out a good bit of interesting material. These men include the Horlbeck brothers, Ezra Waite, Gabriel Manigault, James Hoban, Thomas Bennett, Hugh Smith, Robert Mills, William Strickland, and Edward Brickell White.

Over a hundred photographs by Carl Julien add much to the interest and value of this unusual book.

TOWARD UTOPIA

Breaking the Building Blockade. By Robert Lasch. Chicago (5750 Ellis Ave.), The University of Chicago Press, 1946. 5¼ by 7¾ in. xiv + 316 pp. illus. $3.00.

What can be done about the housing problem? That is the question which Robert Lasch methodically dissects in this book — a question, he says, to which no answer will materialize until the general public wakes up to the fact that housing is everyone's problem, not just the problem of the expert. "America will have good housing only when the people demand it," he avers.

Since diagnosis always must be the first step toward treatment and hoped-for cure, Mr. Lasch starts his study with an analysis of housing's present ills: lack of quantity, lack of quality, and blighted neighborhoods. To remedy the first of the three in particular, and all of them in general, he says 15,000,000 houses must be built in the next 10 years, "an average yearly construction of more than 1,500,000 houses, compared with an average actually built in the last postwar boom of 703,000 a year. . . ." The NHA, he continues, concerned about the public's reaction to such large thinking, by assigning 20 rather than 10 years to the replacement of substandard housing has whittled the first decade's need down to 12.6 million units. But, says Mr. Lasch, "if it is desirable to provide for every family a house with a private bath and toilet, then we do not solve the problem by concluding that some families might well wait 15 or 18 years before such facilities become available to them."

Deciding how many units must be built and in how many years, however, is not the solution to the problem. Like many another capable writer on the subject, Mr. Lasch is concerned primarily with the reduction of housing costs. The national program he recommends is well-rounded:

"1. To build fifteen million houses during the first 10 postwar years;

(*Continued on page 30*)

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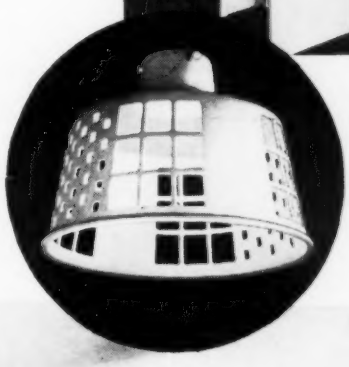
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(At left) Professor's study adjacent to stack area constructed of Snead Type SF steel Mobilwalls.

(At right) Special Snead Study Unit combining study carrel desk, book shelves, and deep folio shelves. Carrels are portable.

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REQUIRED READING

(*Continued from page 28*)

"2. To reduce the capital cost of owner-occupied housing to the order of $3,000 or less for a good five-room house including land;

"3. To provide sound rental housing at less than $20 a month, less than $30, and less than $40, in the amounts needed to supply families whose income requires such rents;

"4. To clear urban slums and rebuild them as safe, clean, healthful, uncrowded, self-contained neighborhoods which set a standard of planned development for the city of the future."

His plan of action whereby he claims these utopian goals may be achieved includes such items as the constitution of the NHA as a permanent peacetime department of the federal government, with cabinet status; intensive NHA research in new construction methods; mass purchase of basic housebuilding materials; a system of yield insurance under the FHA to induce investment of equity capital in housing at rents of $20 to $40 per month; federal loans and subsidies for land assembly in the reclamation of slum areas.

An appendix to the volume offers a sample planning project for the redevelopment of 165 acres of slum land.

FOR BETTER HEALTH

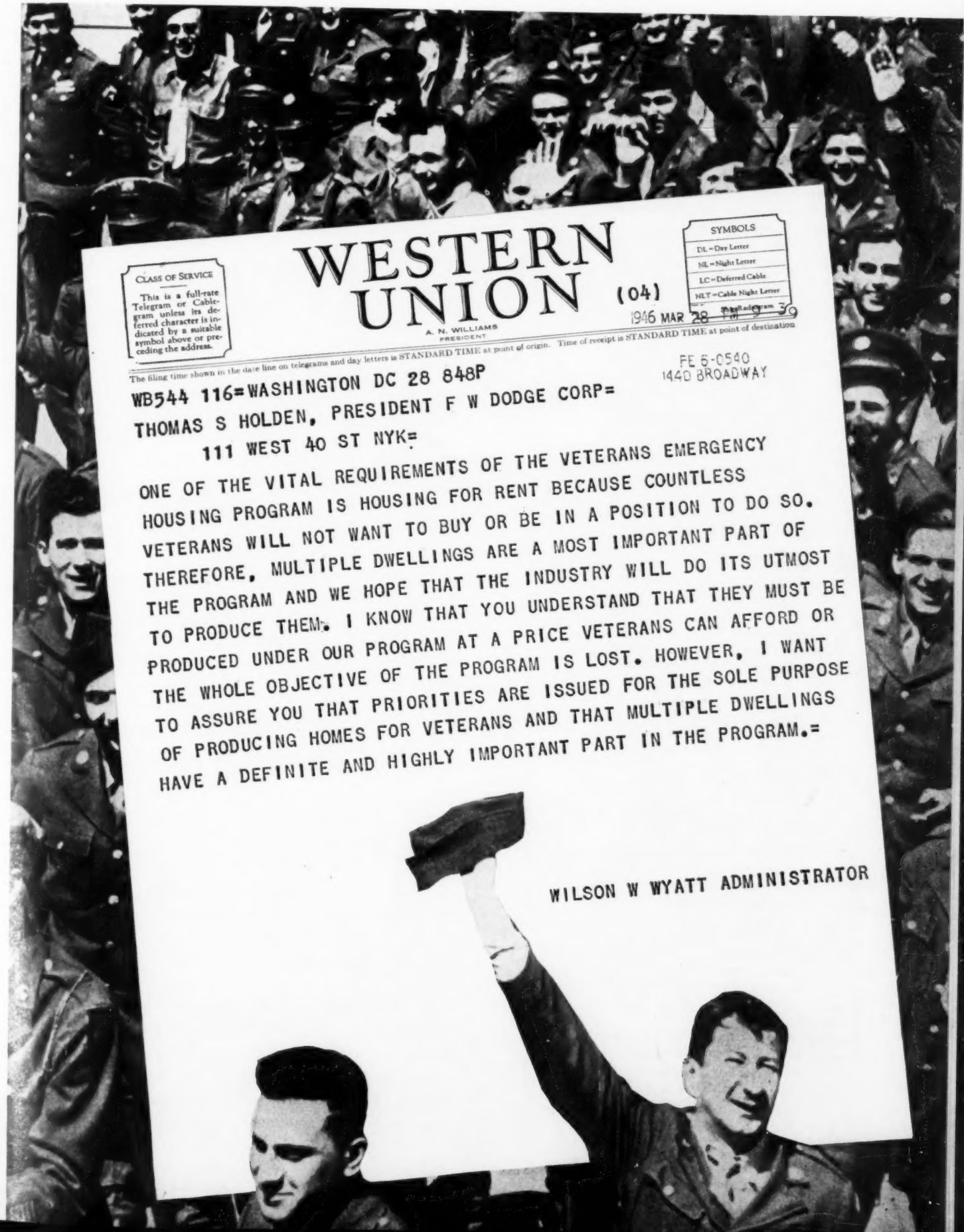
The Modern Small Hospital and Community Health Center. Edited by Alden B. Mills and Everett W. Jones. Chicago, Ill., The Modern Hospital Publishing Co., Inc., 1946. 10 by 13¾ in. 138 pp. illus.

This volume of plans for small hospitals and community health centers, the results of a competition sponsored by *The Modern Hospital*, should be of considerable interest and help not only to a group planning such a facility, but also to the architect engaged in such work. The text preceding the plans includes chapters on the need for small hospitals and health centers, surveying the needs of a community, architectural trends, professional and administrative organizations, the patient's needs, and structural notes. Each plan presented is accompanied by the contestant's statement and a comment by either the jury (in the case of a prize-winning plan) or the editors. Forty-one plans in all are shown: 33 for the 40–60 bed hospital, and eight for the health center.

As each of the projects presented was designed for a specific locality, to meet specific local requirements, the plans vary widely. The majority of them, however, call for one-story buildings, with patients' rooms oriented to the south. Particular attention has been paid to the location of ambulance entrances and nurses' stations.

(*Continued on page 152*)

THE CASE FOR RENTAL HOUSING



WESTERN UNION (04)

A. N. WILLIAMS, PRESIDENT

CLASS OF SERVICE: This is a full-rate Telegram or Cablegram unless its deferred character is indicated by a suitable symbol above or preceding the address.

SYMBOLS: DL = Day Letter; NL = Night Letter; LC = Deferred Cable; NLT = Cable Night Letter; Radiogram

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WB544 116=WASHINGTON DC 28 848P

THOMAS S HOLDEN, PRESIDENT F W DODGE CORP=
111 WEST 40 ST NYK=

ONE OF THE VITAL REQUIREMENTS OF THE VETERANS EMERGENCY HOUSING PROGRAM IS HOUSING FOR RENT BECAUSE COUNTLESS VETERANS WILL NOT WANT TO BUY OR BE IN A POSITION TO DO SO. THEREFORE, MULTIPLE DWELLINGS ARE A MOST IMPORTANT PART OF THE PROGRAM AND WE HOPE THAT THE INDUSTRY WILL DO ITS UTMOST TO PRODUCE THEM. I KNOW THAT YOU UNDERSTAND THAT THEY MUST BE PRODUCED UNDER OUR PROGRAM AT A PRICE VETERANS CAN AFFORD OR THE WHOLE OBJECTIVE OF THE PROGRAM IS LOST. HOWEVER, I WANT TO ASSURE YOU THAT PRIORITIES ARE ISSUED FOR THE SOLE PURPOSE OF PRODUCING HOMES FOR VETERANS AND THAT MULTIPLE DWELLINGS HAVE A DEFINITE AND HIGHLY IMPORTANT PART IN THE PROGRAM.=

WILSON W WYATT ADMINISTRATOR

A recent survey we have made covering 251 cities with a population of 35 million indicates that the present housing demand is 22 units per 1,000 of urban population for the nation as a whole. Of these 22 units, 14 should be detached, owned homes, 8 should be apartments, which means, of course, rental units.

This survey represents the housing demand as a whole. I personally do not see how it is humanly possible to separate the housing necessities of the veterans from those of other civilians. The veterans are civilians, and 10 million of them have now taken their place in our normal community and economic life. Veterans are all sorts of people, and do not have, as far as I know, housing needs that are peculiar to them alone.

The greatest obstacle to the development of an adequate program of rental housing today is, of course, OPA. As long as we have rent control which is administered against the interests of the investor, it is the government itself which is to blame, and no one else, if we do not have sufficient rental housing. The administration of rents is not only consistently unfair, but often arbitrary and whimsical. Builders have gone ahead with rental projects upon approval of FHA of the scheduled rents. After the building has been constructed and tenants have moved in, OPA has come along and cut the rents. I have a file of cases on this matter which will make interesting reading some day. When government itself acts as dishonorably and unfairly as this to the investor who takes a risk, it is hard to see how money, which is always timid, and which in the case of rental housing enters upon a long term and risky undertaking, can be expected to step out and fully meet the need.

We have felt that the veteran was entitled to special consideration in overcoming the change in the price structure during his absence in our armed services. We are, therefore, backing a bill which would give the veteran homestead aid in the city or country up to the sum of $2500, depending on the length of his service. We believe that rather than try to twist the whole economy to aid the veteran, we should instead give the veteran direct monetary aid so that he can go into the market for his housing on a parity with those who stayed at home.

HERBERT U. NELSON,
Executive Vice-President
Natl. Assn. of Real Estate Boards

RENTAL HOUSING WA

WILSON W. WYATT's wire, in response to Mr. Holden's request for a statement on rental housing, shows conclusively that he is fully aware of the immediate and vital need for rental housing because "countless veterans will not want to buy, or be in a position to do so." He has followed up this statement with a general press release which says in part, "The need for rental housing can't be underestimated, so we intend to give all possible encouragement to the construction of apartment buildings, large and small. They not only will provide the type of housing many veterans need, but the large projects will furnish jobs to types of workers who are not generally employed on small house construction."

These are encouraging words to those who agree with us that multi-family dwelling-units for rent deserve special emphasis to offset the erroneous impression that the Veterans Emergency Housing Program was a "small house" program. Too much popular press publicity on the $6,000 house had created a false impression. Mr. Wyatt recognizes that many, if not most, veterans "are not firmly established to the point where they are ready to settle down to a lifetime job in a specific community. Many of them are . . . embarking on their first jobs and consequently do not want to be tied down by an investment in a permanent home." The answer is obvious — multi-family dwellings for rent. The case for rental projects is stated in pages which follow. There are established advantages to such projects, — advantages to the tenants themselves, to the builders, to labor, to manufacturers, to architects, to the financing institutions, to the community and its city planning, to the city tax structure, and to the whole American economy. Mr. Wyatt promises to give "all possible encouragement" to their construction.

The prime factors in "all possible encouragement" will be the attitude and actions of those administering the program — NHA, FHA, OPA, and CPA. Of course, without building materials and equipment, in quantity — and fast — "encouragement" is only aggravation. Mr. Wyatt already has all the powers needed to break bottlenecks and really speed production. He and the agencies he controls can provide more material encouragement than his statements have yet indicated.

Still further encouragement is needed if private enterprise is expected to produce rental housing. If rent controls are arbitrary, are not realistic in their relation to the cost of production and operation of apartment houses, they will operate as effective deterrents to any new construction of this type. Government action that gears rent ceilings to costs and

WANTED—BUT QUICK!

which permits a reasonable investor's profit is absolutely necessary.

Special inducements to investors in such housing may be indicated. Faster than normal depreciation allowances for tax purposes might well make sense. The promise of a deferred subsidy, payable at the end of five years in the event the then appraised value of a particular project is less than the original appraised value after adjustment for depreciation, has been put forward as one positive means for encouraging private investors to finance multiple dwelling projects now. In the event that costs continue high such a plan would cost nothing. In the unlikely event that costs trend downward, the subsidy so extended would be a fair price to pay for quick provision of the kind of habitation most veterans want.

One phase of providing "apartments for rent" seems to be almost entirely overlooked in the current emphasis on low-cost houses for veterans. That is — *all* new dwelling-units, large city apartments and the homes owners build for themselves, add to the net gain in dwellings available and therefore relieve the shortage. Apartments released by those who can pay for *new* accommodations become available for others younger or less affluent. This should be taken into account immediately and provision be made to permit the building of a reasonable proportion of dwelling units (perhaps 25 per cent of total rental units approved) above the present maximum cost, say for a top limit of $120 per month rent. This would not only relieve the shortage all down the line but would provide work for many trades and artisans who have been thrown out of work by the new rulings — steel workers, tile setters, elevator mechanics and many others.

Many medium-rent apartment projects are now dormant in the hands of the large and competent contractors in almost every city. Since different and higher quality materials are used in their construction, such apartments would not diminish the materials or manpower available for low-cost construction to an appreciable degree. In addition, manufacturers could resume production of their full lines of products, increasing employment, without jeopardizing the production of the materials for low-cost dwellings. Maximum production, from the men and machines now ready to get to work producing materials for multi-family dwellings can be encouraged only through a balanced program incorporating *incentives* as well as safeguards.

Kenneth K. Stowell
EDITOR

Most veterans, having just returned to civilian life, face a period of adjustment and must grow new roots in the community before they should be asked to undertake the responsibility of home ownership. Until they are confident that their job is secure and to their liking they will want and need a maximum of mobility.

Many of the returning veterans have, as yet, no children; in many cases the wife expects to keep on working until there are children. In such cases a small apartment, involving a minimum of household duties, is the logical answer to the housing needs. Furthermore, furniture will continue to be scarce and expensive for some time to come and for this reason it will be simpler for the veteran to furnish a two-room apartment than a four- or five-room house. Finally, most of the returning veterans will find that it is impossible to buy an automobile and will, therefore, prefer to live at a reasonable distance from their place of employment.

National statistics indicate that, for many years, about 40 to 45 per cent of American families have been home-owners — or at least equity owners — whereas 55 to 60 per cent have been renters. It should be obvious that, in the case of veterans, these percentages cannot be used as a safe guide to housing needs. It is more likely that the real demand would be about 25 per cent for home ownership and 75 per cent for rental housing.

If the above diagnosis is correct — and we believe it is — then how shall we reconcile it with the emphasis that is being placed on the production of small houses under the present veterans' housing program? If we devote ourselves almost exclusively to the production of small houses for the next two years we shall not only wreck the construction industry, we shall not be solving the problem in a manner that meets the real needs of the veteran.

There are great segments of the construction industry — among which the architects are only one — that will have no part to play in the program as it is at present conceived. A more realistic approach would put a far greater emphasis on the construction of multi-story apartments. This solution would require so-called heavy construction and permit the survival of many elements in the construction industry that will be badly needed later on. It would make a more complete use of *all* our existing facilities in providing a maximum of housing for the veterans. It would give the veteran the *kind* of housing he needs as well as the quantity desired.

LOUIS JUSTEMENT
for The American Institute of Architects

I believe that there is no actual distinction in the restrictive orders between purchase and rental housing. There seems no doubt that a considerable majority of veterans in the metropolitan area would prefer to rent rather than buy, and there is nothing except economics that would prevent the construction of well constructed permanent garden type apartments in and around New York for rental to veterans.

I have been advocating for some time the use of relatively small plots for low rent housing and have defined a small plot for such purpose at about 30,000 sq. ft. I believe the effect on the city of relatively small, well-designed low rental housing would be far better than the large projects to which we are accustomed. I believe that the smaller project would have a stronger influence for good on the surrounding land, and produce healthier neighborhood conditions (healthier in the sociological rather than the physiological sense), and would better distribute the load on existing utilities and public facilities.

PERRY COKE SMITH, *President*
New York Chapter, A.I.A.

Says Most Veterans Can't And Don't Want to Buy Homes

Robert W. Dowling Declares They Are Too Young and Shift Jobs Too Often—Proposes Incentive to Builders.

By GARRETT WINTER.

The great majority of returning veterans are not only in no position to buy homes but they don't want to buy, in the opinion of Robert W. Dowling, president of the City Investing Company, who told The New York Sun today: "They are too young; they have no roots, and they may change jobs two or three times in the first year or so."

It is, indeed, unfortunate that speed has become such a critical factor. St. Louis, like many other large cities, has had a critical shortage of low-cost rental housing for many years. Along with this shortage, we have had large sections of the city, where the ravages of time have taken their toll, which are crying for such development.

Numerous studies and plans have been made and, in fact, some units built. A continuation of such a program would not only help rebuild our cities but would solve our present critical need for housing. With time, however, so critical, temporary measures will have to be taken to fill the immediate need.

WM. B. ITTNER, *President*
St. Louis Chapter, A.I.A.

THE CASE FOR R

ONE of the vital requirements of the veterans' emergency housing program is housing for rent, because countless veterans will not want to buy or be in a position to do so." This quotation from the telegram (see page 67) from Wilson W. Wyatt, Housing Expediter, to Thomas S. Holden, president of the F. W. Dodge Corporation, ably states the essence of the case for rental housing.

Mr. Wyatt's telegram came in response to Mr. Holden's inquiry as to the part rental housing was to have in the veterans' emergency housing program. The reply extends a measure of official approval of the RECORD'S conviction that in this emergency a heavy proportion of materials should be channeled into multi-family buildings offering rental units.

Rental housing would make a number of substantial contributions to an emergency housing program for veterans. Rental housing would:

1. Save time.
2. Best meet the needs and desires of a very large proportion of returning soldiers.
3. Reduce the veteran's investment in furnishings, household equipment, perhaps eliminate the need for an automobile.
4. Save substantially on scarce materials; utilize materials not much used in small houses.
5. Save heavily in land and land development costs.
6. Save in extensions of community and utility services.
7. Constitute a better addition to community housing supply, and to tax rolls, than would a like number of minimal detached houses.
8. Avoid creation of future blighted areas.
9. Utilize facilities and personnel of big-building organizations which made such dramatic speed records in constructing war plants.
10. Balance an employment program to include the most highly skilled and most readily available labor supply.
11. Utilize manufacturing plant facilities that would remain idle in a program devoted solely to small houses.

Mr. Wyatt's telegram may be accepted as news of some importance. The promise it offers of priorities for apartment projects will be reassuring to many who have

RENTAL HOUSING

By Emerson Goble

pored over recent pronouncements leading to the building restriction order, looking for any specific blessing for apartments.

In their own studies of housing problems and of the so-called Wyatt program, RECORD editors have become concerned over an apparent disregard for rental housing. The disregard is more serious than a mere lack of specific mention in government statements and orders; missing also is any indication of the lifting of curbs that have been discouraging apartment investment.

And investment funds must be attracted to the task for the program to succeed. Mr. Wyatt's request for 2,700,000 units in less than two years is a large order. Too large to be accomplished without the full facilities of the industry, without full cooperation of private enterprise. The government, with public building, could do but a very small portion. The speculative builders could do much more, but still not enough. But there is a huge reservoir of private investment funds, ready and anxious for an invitation. Investment capital, however, is surrounded by natural caution, and needs more positive encouragement. It wants a permanent marriage, not a quick fling at speculative romance.

Wyatt's original statement to the President did contain this paragraph:

> "A job of this magnitude is going to require the best efforts of the entire building industry including both large builders and small, both builders of apartment houses and large developments and builders of individual homes. Large scale production of materials will enable the big builders to go ahead rapidly with the larger housing developments."

But that was the only reference to rental housing in a very long statement, and later and more official documents made no mention whatever of apartment construction. There was, and still is, some cause for concern. Every statement seemed directed solely at the familiar picture of the weary, bedraggled soldier lying in his foxhole dreaming of a clean Cape Cod cottage.

Now that is a perfectly good picture, and a normal wish of the typical young American for his own home, his own plot of ground, his own garden. It might be said to epitomize the good American life. Yet the fact remains that the realization of that dream is not given to

Conditions in this territory indicate a growing reluctance on the part of veterans to build or buy at this time. It appears that by far the larger majority would rent for a few years until conditions become stabilized if rental property could be found.

During the past few days several local veterans have volunteered criticism of the new building ban because of its restriction of rental housing, including apartments, and its possible future effect on employment in the building trades. This area appears to be overwhelmingly against the new order.

JAS. GAMBLE ROGERS, II, *President Florida Central Chapter, A.I.A.*



ACME Photo

Speaking particularly of the Chicago area, it is believed that too great emphasis has been placed on the need of single-occupancy dwellings rather than on multiple dwellings or apartment buildings. Chicago veterans undoubtedly prefer rental quarters. Their future family status is as yet uncertain. They are unwilling to assume a twenty or twenty-five year mortgage obligation.

The majority of Chicagoans are apartment dwellers; in fact, less than one-quarter thereof reside in one-family residences.

During the past sixteen years, other than by means of conversion of larger apartments or homes to smaller units, or through public housing ventures, there has been a neglible number of apartments provided. In fact, as a result of demolition there are today a lesser number of apartment dwellings in Chicago than there were twenty years ago, despite a population increase of over 15 per cent.

PAUL GERHARDT, JR., *President Chicago Chapter, A.I.A.*

Rental housing has apparently been sadly neglected by those in authority during this crisis in spite of statistics which show that from 50 per cent to 75 per cent of our servicemen prefer to rent than to buy or build. If these figures are correct, the present building stop-order can almost be called class legislation, as it is entirely to the benefit of the servicemen who can or want to build rather than to those who prefer to rent, the latter apparently being in the majority at that.

Rental housing of the permanent garden-type apartments properly laid out and supplanting present slum areas would be to far greater advantage to the servicemen and the communities than the new areas to be filled with cracker-boxes and prefabricated houses which are to despoil our suburban areas and create new slums before many years.

DALE R. McENARY
McEnary & Krafft, Architects.
Minneapolis

It seems to me that your point for rental housing for the veteran is very well taken. Despite the fact that loans are available for the building of homes, many will need these loans for establishing business ventures. In addition to this, there are many people who, by virtue of their occupation, are not able to anticipate a fixed residence. They, naturally, would pefer to rent.

RALPH O. YEAGER, *President*
Indiana Society of Architects

War Veterans 85% Renters, Bankers Find

Consolidated Edison Study Shows 1,958,518 Units Are Tenant Occupied

A report received this morning is that in this area about 60 per cent of the returning veterans make inquiries as to rental or purchase, and of those 60 per cent, 23 per cent are desirous of buying while 77 per cent are more interested in rental.

WM. TEMPLETON JOHNSON, F.A.I.A.
San Diego, California

most families, not even to half of them. And the typical veteran is a young man, with his civilian position yet to be established and secured, his family yet to be acquired. In such a housing emergency as this, it would seem obvious that the average veteran is less concerned with undertaking home ownership and its costs and responsibilities, than with simply finding a place where he and his wife can escape interference and in-laws.

It should be perfectly clear that nobody wishes to object to preference for veterans in any current housing program. They deserve the housing they need and want. And they represent the group that most feels the housing shortage. By the same token it should also be clear that the veterans' housing program should be for veterans. It should give them, quickly and directly, the housing they really want. It should be geared as closely as possible to veterans' specific needs. It should be an emergency program, with speed a prime objective. It should not be confused with any false hopes, any regimentation, any political motives.

WHAT DOES THE VETERAN WANT?

Recently in an address one of the spokesmen for the National Housing Agency stated with strong emphasis that the program was geared directly to veterans' needs. A questioner asked what proportion of veterans wanted to rent and what to buy, and the speaker had to say that no study of such preferences had been made.

To date no comprehensive study has appeared, from official or unofficial sources. A mortgage institution in New York City quotes figures tending to show that in that city the preference is as high as 85 per cent for rental units rather than single-family homes, based on a utility company survey of existing ownership conditions. Other sources in New York estimate 75 per cent or 80 per cent.

Naturally the largest city in the land would show the highest preference for rental units. But the RECORD has received opinions from Florida and California which mention rental preferences running to 75 or even 90 per cent, when the question referred specifically to veterans.

The National Association of Real Estate Boards, always a strong advocate of home ownership, reports a study indicating that approximately eight out of 22 new units should be apartments. This study does not isolate veterans' needs, indeed the Association executive vice-president, Herbert U. Nelson, takes the position that it is not possible to separate housing necessities of veterans from those of other civilians (see page 68). The report did, however, cover some 251 cities with a population of 35 million, and indicates a total need of 22 units per thousand of urban population. Of these, says the report, 14 should be detached, owned homes; 8 should be apartments.

A War Department survey at separation centers indicated that only one per cent of all veterans surveyed were interested in buying a home in the immediate future, and only nine per cent could be considered as rep-

resenting an effective demand for houses "after becoming settled."

Without benefit of statistics it is obvious that veterans' immediate preferences would not be overwhelmingly for the single house to be built or bought for ownership. The typical veteran is not in the age group that normally buys houses. As a class, veterans are too young. And as a class, they are unsettled, uncertain about their futures, unable and unwilling to take on the burdens of home ownership.

Costs would bar most veterans from ownership at this time, even if they were ready for it. Surely the cost limits in the government's program ($6,000 generally, $10,000 in high-cost areas) are minimum. Nevertheless they are still out of reach of the great majority of returned G.I.'s.

Costs of the house and lot, moreover, are not the only costs involved. The typical returned soldier has not acquired his van load of household goods. There is furniture to be bought, and bedding and dishes and garden tools and linens and clothes and cribs and diapers. And, last but not least, an automobile. Most of these things are hard to come by in these reconversion times, and are increasingly expensive.

So it is perfectly obvious that the veteran and his wife will naturally prefer a small apartment, close to established employment, close to transportation. Plenty of time yet for the dream house and the half acre.

And if the cost limits would make the house too expensive to own and maintain, they are too low to give him anything that could pass for a dream house. The $6,000 house is not the push-button vision of the wartime advertisements. Mass-produced, prefabricated, site-fabricated or conventionally built, the $6,000 house of today is definitely a minimum house on a minimum lot, minimum in space, in construction, in equipment, in design. It will not add much to its neighborhood, not now and certainly not in the future. It will not stimulate a pride in ownership or a desire to carry on the payments in times of adversity.

To extend government credit to the veteran to buy such a house may not be doing him much of a favor.

HOW ABOUT THE COMMUNITY?

If it would not represent a favor to the veteran, it would be no favor to the neighborhood either. The community has cause for concern in the potential blight of quantities of cheap, thinly held houses. Right now a rash of cracker-box houses might be accepted as relieving a tense dwelling shortage. Nobody doubts, however, that the future would be bleak.

It is not cynical to point out that the veteran who bought such a house would have little reason to take his ownership seriously. He must have shelter, so he buys unwillingly. He borrows, perhaps up to $4,000, under the G.I. Bill of Rights. Furnishings eat up his savings, payments put a strain on his earnings. Maintenance expenses after the first few years could well become the straw that breaks his back. Or, he changes jobs, or his

During the period of the war, projects totaling many thousands of small single-family dwellings have been constructed. The actual building and planning of additional housing of this type is continuing. All of these houses, of course, have been financed under the program of the Federal Housing Authority and are built for sale. The actual developer of the projects can not rent them.



As a consequence, very few projects have been built during the past five years for rental housing, and there now exists in this community, and I believe in all of California, the greatest lack of rentable units that we have ever known. There is probably no need to mention the fact that California is now experiencing the greatest influx of new population that it, also, has ever known! The result is that not only returning veterans are seeking places to live, but also people in all walks of life are attempting to find temporary shelter. In my mind there is only one real solution. There should be a definite increase, in this locality at least, in the number of rentable housing units.

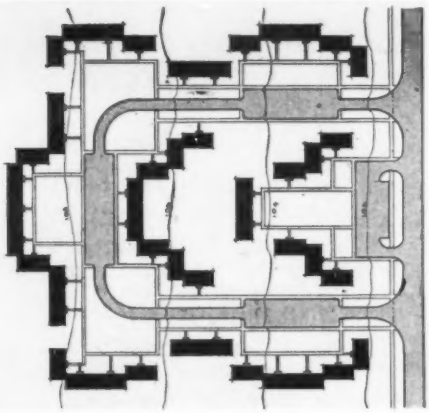
This cannot be achieved under our present economic system. Construction costs have risen to a point at which it is no longer profitably possible for anyone to construct rentable units for the maximum rentals which have been allowed by our government agencies. I do not necessarily mean to imply that I believe construction costs must come down to the level of allowable rentals. I believe adjustments must be made upward in rentals and downward in the price of construction through greater efficiency in labor and through natural competition of private enterprise. I personally in no way criticize the virtue of clearing slum districts in crowded cities and replacing them with attractive multiple dwellings for low-income families. For those families which enjoy the somewhat higher to medium bracket incomes, however, it is only logical that private enterprise should be free to construct multiple family projects, ones which are economically profitable over an extended period of amortization.

CHARLES O. MATCHAM, A.I.A.
Los Angeles, Cal.

Our experience here is that the present day costs of building and the scarcity of basic materials prohibit the veteran from building a home. The banks are loaning the veterans the money to build a small garage in which living quarters are provided, and later they can build the house on the front of the lot.

My opinion is that 75 per cent of the veteran housing would be solved if the boys could find places in which to live. If rental housing could be expedited it would satisfy a large majority of the veterans' needs in our community.

ROY C. WILSON, *President*
Santa Barbara Chapter, A.I.A.



The Board of Governors of the Washington Building Congress, of which I am a member, has been very active in connection with the proposed program, and I think our job has been successful in a measure because rental housing is very definitely going to receive favorable consideration.

I have been informed that 70 per cent of the G.I.'s received $35.00 or less in wages before they entered the Service, and obviously it isn't going to be possible for anyone in that bracket to own and operate a house and all that goes with it. There will be furniture to buy and probably a car, because low-cost individual houses will have to be built on low-cost land, which is usually away from transportation. Likely a family will come along and with it doctor bills, and if things do not work out the G.I. has lost his down payment and more besides, but worst of all he will become very unhappy and possibly a burden to the country.

So, if we stress the individual home too strongly we might be doing the G.I. a disservice rather than a service.

The apartment idea appears to be very sound for a number of reasons. In the first place, the apartments can be constructed on higher priced land, which is generally closer in and available to adequate transportation. This eliminates family outgrows his house. Now perhaps the housing shortage has eased; it is possible to find a place to rent. There is a strong temptation just to abandon his ownership, and dare the mortgagee to get a deficiency judgment against a veteran.

Meanwhile the community has put out substantial sums for sewers, water lines, paving and what not. Probably more in the aggregate than the little house ever could return in taxes, even if taxes continued. And now there is only an abandoned, rundown eyesore.

How much better off the community would be if its new building included a substantial proportion of garden apartments! Probably in the first place these could go on land already developed and served with utility lines. In any case, extensions of services per dwelling unit would be considerably more economical. The apartment building would pay its taxes, would continue to pay them. The buildings would be reasonably well maintained, would constitute a permanent and valuable addition to the tax rolls and to the community.

HOW ABOUT ZONING?

One of the present discouragements to apartment investors is zoning restrictions, especially around large cities and their suburbs. Most of the larger sites now ripe for apartment development are either zoned or restricted in deeds to single-family house construction, many calling for nothing but expensive homes. These could not be used in any way to relieve the current shortage. They have the choice of waiting out a two-year ban on better-class development or breaking down zoning regulations or restrictions to permit either apartment or cheap-house construction.

This situation is, of course, of considerable importance to sound community development. Where zoning calls for houses, but without price restrictions, there is now the threat of acres of potential blight.

WHAT ABOUT MATERIALS?

Patently the entire housing program hangs on the production of sufficient materials. Frequently it has been said that there is really no other problem. "Give us materials," cried the home builders in their recent convention, "and don't worry about another thing."

It is also quite apparent that the materials problem is not one of production capacity, but rather of prices. The Producers' Council made it clear in a recent survey that there is ample production capacity available to supply materials needs, except for plumbing facilities and lumber, sufficient for a total annual building program of $15 billion. Plumbing supply manufacturers could take care of a $12 billion building year with present capacity, and would have little trouble expanding to keep up with the parade. All providing, of course, that the pricing situation is ironed out to permit them to attract the necessary labor.

Here, however, the concern is with houses vs. apartments, and the materials involved in each.

The quick reaction is that apartment construction would be much more economical of materials in general than would comparable units in single-family dwellings. But that isn't necessarily so. There likely would be an over-all saving in apartments, since the average apartment unit would be smaller than the average house. F. W. Dodge figures on page 76 bear this out. But if the apartment unit be assumed to offer the same total area as the house, the total material saving would not show up in so simple a manner.

The point is that the apartment building would use *different* materials, not necessarily less. In terms of cost per square foot, the materials for each type of unit might well run about the same — the apartment building would save in total cost largely through economies in land use and utilities, but would require an equal expenditure for materials by virtue of being better built. There would be fireproof stair construction, for example, sounder construction generally, to protect the owner's investment and to protect him from liability suits that might follow neglect of safety provisions.

The difference in the materials is the important factor today, when shortages are the bottleneck. The apartment building can go up with almost no lumber, for example; the fireproof building uses lumber principally for form work, and steel forms could just as well be substituted. True, apartments require plumbing — another scarce item — but even here there is economy, particularly in the much-heard-of soil pipe.

In general, moreover, the apartment building takes the more expensive items that go into permanent construction. To the manufacturer that means he can produce his total lines, not having to reconvert all his facilities for low-cost items. It means also that more different manufacturers can do their part in the program, for there are many who make virtually nothing for the low-cost house market.

WHAT ABOUT CONSTRUCTION COSTS?

It is hardly realistic to make direct comparisons of costs between houses and rental units. As has already been indicated, there is not much difference in terms of cost per unit of space. It is virtually impossible to find a true comparison of costs of one specific project against another, for no two are sufficiently alike.

Perhaps the best comparison would be between *all* apartments and *all* houses, for in such a program as is now beginning it is the over-all picture that is important. The Dodge Statistical Research Service provides good material for this comparison. On page 76 are tables showing Costs per Dwelling Unit for four types of residential construction, Cost per Square Foot, and Square Feet per Unit (average).

The tables indicate several conclusions of current significance. First, the average apartment unit costs considerably less than the average house. The apartment costs considerably less than the house built speculatively, still less than the house built for owner occupancy.

On a square foot basis there is little choice, with the

the necessity of an automobile. Then, too, both architects and large contractors who would not be interested in building individual houses would remain in business because they could contribute to something with which they have long experience. With twenty or more units to the acre in the higher priced land, chances are that the allocated portion of the land value to each unit would probably be less than the land value charged to the individual house.

A. R. CLAS, A.I.A.
Washington, D. C.

I am glad to hear that you are going to call attention to the merits of multi-family housing as an important (and neglected) element in solving the housing shortage.

Even in normal times the semi-detached house or garden apartment gives the non-farm family of average income more house for its money than a single-family house. The English have long recognized this in their housing programs. Henry Wright in his articles in the Architectural Record of March 1929, March 1930 and October 1931 demonstrated this principle in detail.

At the present time materials used in apartment houses and other forms of multi-family housing are relatively easier to obtain than lumber, etc., used in single-family dwellings. Another important element is the fact that a large proportion of single-family houses are built on new land which requires an extensive installation of streets and public utilities, while apartment houses and other forms of multi-family housing are generally built on developed land, with streets and utilities in.

ROBERT L. DAVISON
Robert L. Davison Associates



It is my personal opinion that far too much emphasis has been placed on individual housing and not enough on rental housing. This was brought out last week at a meeting of the North Texas Chapter. While the percentage of veterans wishing to rent instead of own a home will not be as high in Dallas as in New York, I am sure a large percentage would prefer to rent.

THOS. D. BROAD, *Past-President*
North Texas Chapter, A.I.A.

The CIO of course believes that the housing program must be well rounded. We understand that not everyone desires to own his own home, and that therefore much emphasis must be given to well-constructed permanent garden type apartments for rent. Several bills now pending in Congress make provision for such community dwellings and the CIO has given its full support to this, as well as the home-owning aspects, of the housing program.

We are not sure just what the proportion is between veterans who desire to own their own homes and veterans who desire to rent. It seems to me that studies could very well be made to determine this point. We in CIO would approve the results of an impartial study. That is, we do not insist on any particular type of dwelling. We think that ordinary citizens can decide that question for themselves. All we say is that the government ought to stand ready to help the American people get the kind of housing they want in the proportions they are able and willing to support.

MEYER BERNSTEIN
CIO Veterans Committee



Statistics are not readily available here to indicate the number of veterans who prefer rental housing over purchase. Conversations with other architects and business men confirm my opinion that rental housing would prove attractive to the majority of veterans.

I returned from the Service myself just two months ago, and feel that I am in touch with the problem as seen from both sides. The average veteran of my acquaintance is still in an unsettled status, trying to get his feet on the ground and in no position to tie himself up financially with home ownership. There has been and will continue to be a goodly percentage to whom rental housing appeals for occupational reasons. Certainly well constructed permanent garden type apartments for rent are needed and could be emphasized. The basic problem, however, is cost. If private capital could see a dollar in it, we would be doing such projects now. It looks to me as though the government has got to make the next move.

JOHN CALVIN STEVENS, *President*
Maine Chapter, A.I.A.

apartment unit slightly above the other types, bearing out the earlier statements about better construction in multiple dwelling buildings.

Of especial significance at the start of an emergency program is the fact that the *average* apartment provides much less total area, something over half that of the average single-family house.

If the objective of the program is to get the most units in the shortest time, *for veterans*, it would seem wise to concentrate heavily on rental housing.

ONE-FAMILY HOUSES VS. APARTMENTS

COSTS PER DWELLING UNIT

	1938	1939	1945	1946 (2 mo.)
Apartments	$3790	$3596	$4787	$4064
Houses—Owner Occupancy	6537	6117	6740	8339
Houses—Sale or Rent	5169	4821	5916	7225
2-family Houses	3820	3477	4398	5585

COSTS PER SQUARE FOOT

	1938	1939	1945	1946 (2 mo.)
Apartments	$3.99	$4.04	$5.20	$4.60
Houses—Owner Occupancy	3.88	3.87	4.51	4.77
Houses—Sale or Rent	3.77	3.72	4.60	4.86
2-family Houses	3.59	3.49	4.41	4.94

SQUARE FEET PER UNIT (AVERAGE)

	1938	1939	1945	1946 (2 mo.)
Apartments	951	891	921	883
Houses—Owner Occupancy	1685	1580	1495	1749
Houses—Sale or Rent	1372	1298	1287	1487
2-family Houses	1065	997	997	1131

from DODGE STATISTICAL RESEARCH SERVICE

WHAT ARE THE PROSPECTS FOR APARTMENTS?

Perhaps the best summary of the prospects for apartment house construction is a recent statement sent out in a letter to the building industry by Thomas S. Holden, president, F. W. Dodge Corp., after his communication with Mr. Wyatt:

"The Wyatt program permits dwelling units to be built up to a cost of $10,000 each. (For example: A 20-unit apartment house might cost up to $200,000). It is probably that the $80 per unit monthly rent ceiling will determine the top cost of investment projects to be built this year. This will permit high quality of construction. It should be understood, however, that Mr. Wyatt wants as many apartments as possible to rent for $50 per month or less. This would indicate a preference for garden type projects similar to those built under Section 608 of Title VI of the National Housing Act (FHA) during wartime. Many of these projects were of superior quality and were built within the $1350 per room cost permitted for FHA insurance; the new Title VI will probably allow a top limit of $1500 per room. At the same time there should be many projects going ahead which will cost more; builders will be able to go over the $1500 per room cost, but it is not yet possible to say exactly how high until the National Housing Agency clarifies the matter."

RENTAL HOUSING

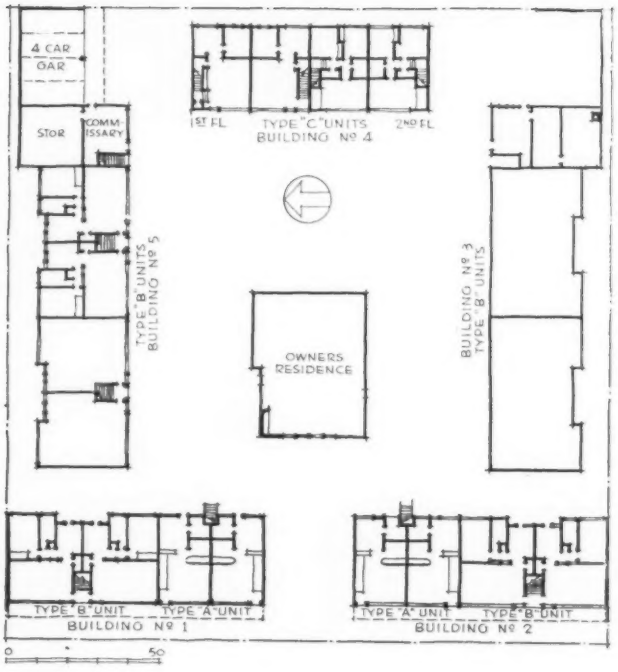


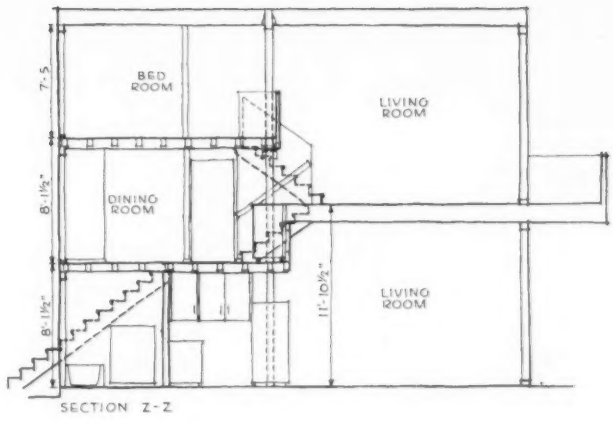
HIGH LIVING ROOMS—LOW COST

Informal Apartment Group for Seaside, Oregon

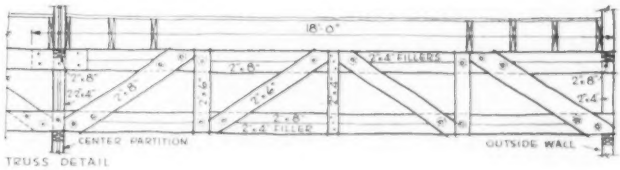
Pietro Belluschi, Architect

IN THE Northwest, where unconventionality seems almost as natural as the reverse, the ground seems especially fertile for new ideas. Here is a little project that sprouts a number of them. The old story-and-a-half living room appears in a fresh new form, in a design that has two stories in front, three in the rear. Two stories of living rooms equals three stories of kitchens, dining rooms and bedrooms. The efficiency apartment with its in-a-closet bed also appears, with a full-size dining room and a high-ceilinged living room, and with its kitchen appended to living room. Evident also is the characteristic freedom in construction techniques, informality in site plan, and in design.

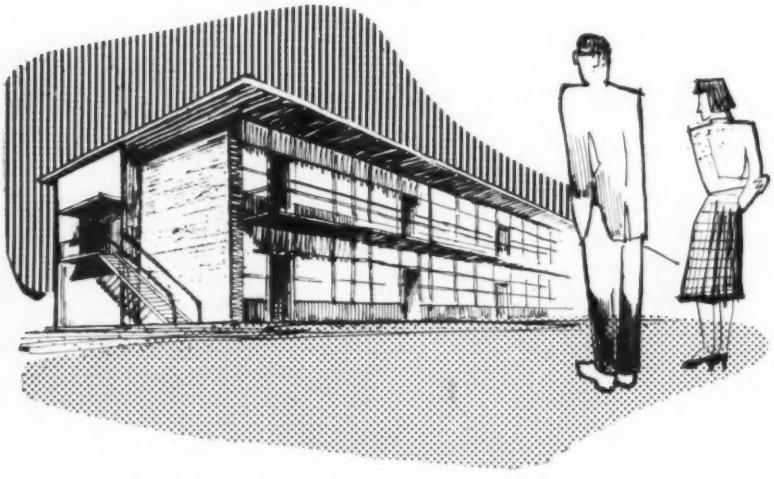




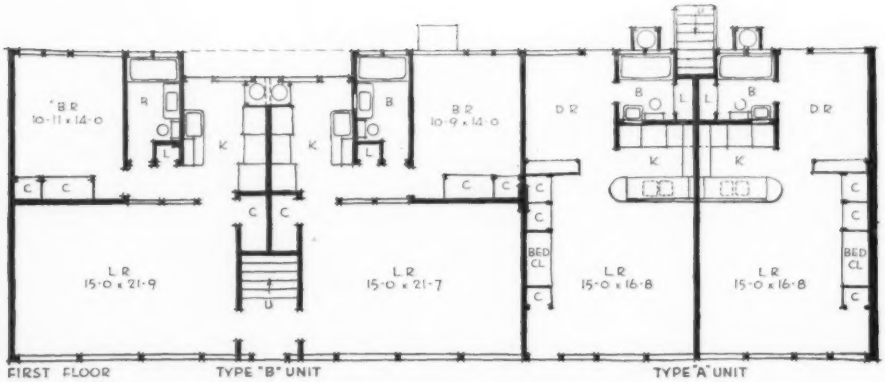
SECTION Z-Z

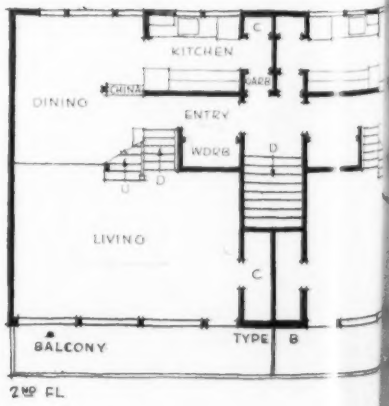


TRUSS DETAIL

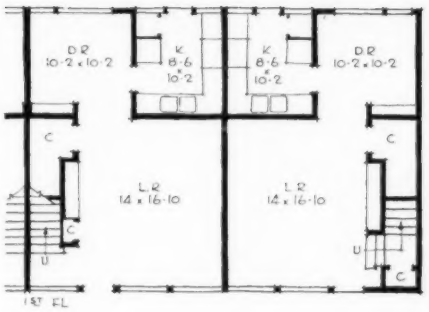


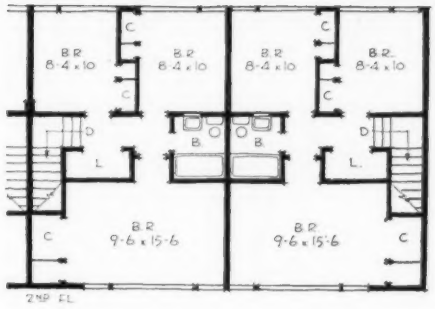
Each apartment, even of the efficiency type, has a story-and-a-half living room, with normal ceiling height in the other rooms, there being two stories in the front equal to three in the rear. The smaller units take the ground floor, the larger ones, with two of the rear levels, have dining room and kitchen on the lower, bedrooms above; thus the living room is at an intermediate level. The rather complicated stairs are supported on wood trusses, detailed above, which runs lengthwise of the building

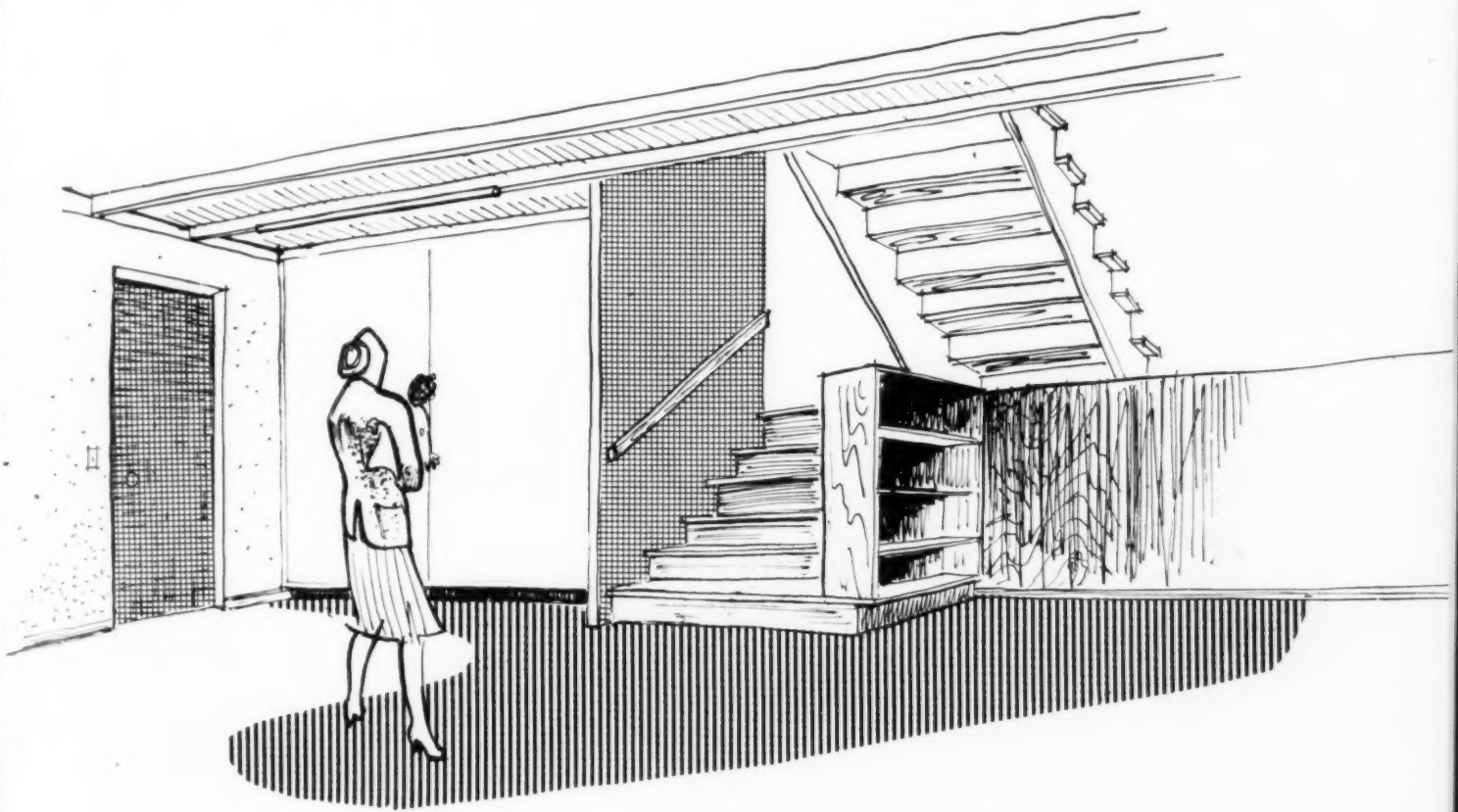


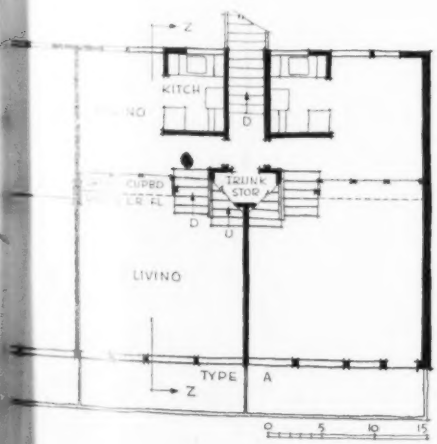


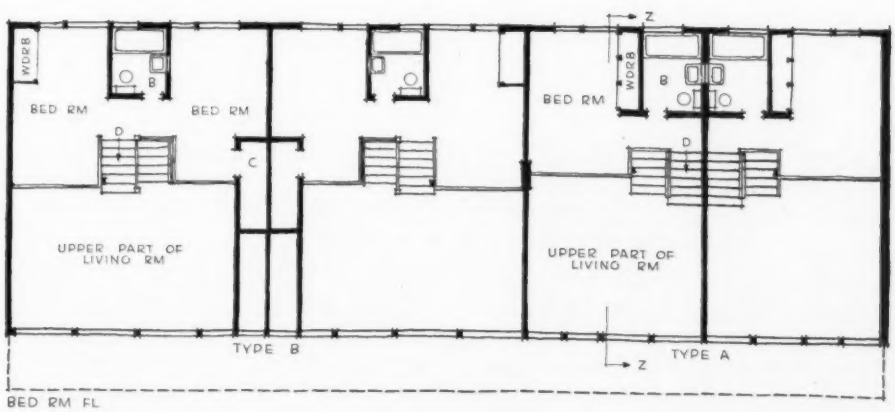
The Type C building, at the rear of the plot, has more conventional row-type units, for the larger families requiring three bedrooms. There are still other apartments taking advantage of second-floor space over garages and service buildings. Heating, by the way, is supplied from a central plant



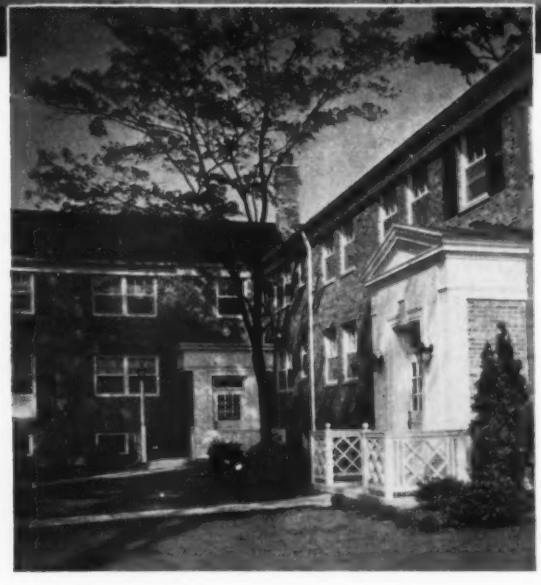












PRESCRIPTION FOR HOUSING TROUBLES

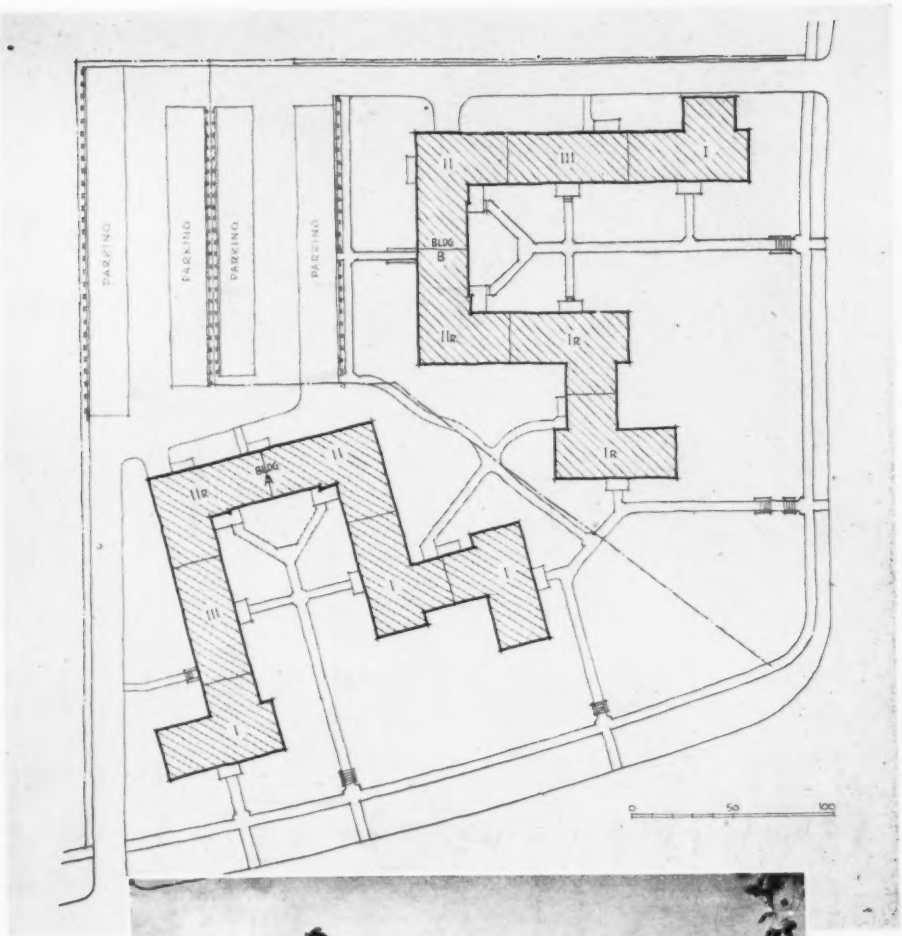
Forest Hill Terrace Apartments, East Cleveland

Garfield, Harris, Robinson & Schafer, Architects

IF THIS project were to be built today, offering 96 apartment units such as these, the rental agents would probably have to barricade their offices, and the builders would have to fight off the tenants to be able to complete their work. It is one of the better-class garden-type projects built under FHA, and as such is probably about at the top of allowable cost limits under the Wyatt program. Units are a little larger than FHA minimum requirements. In any case it is an excellent illustration of the savings in land and development costs possible with rental units, and it offers the kind of accommodations that veterans' families should find ideal.

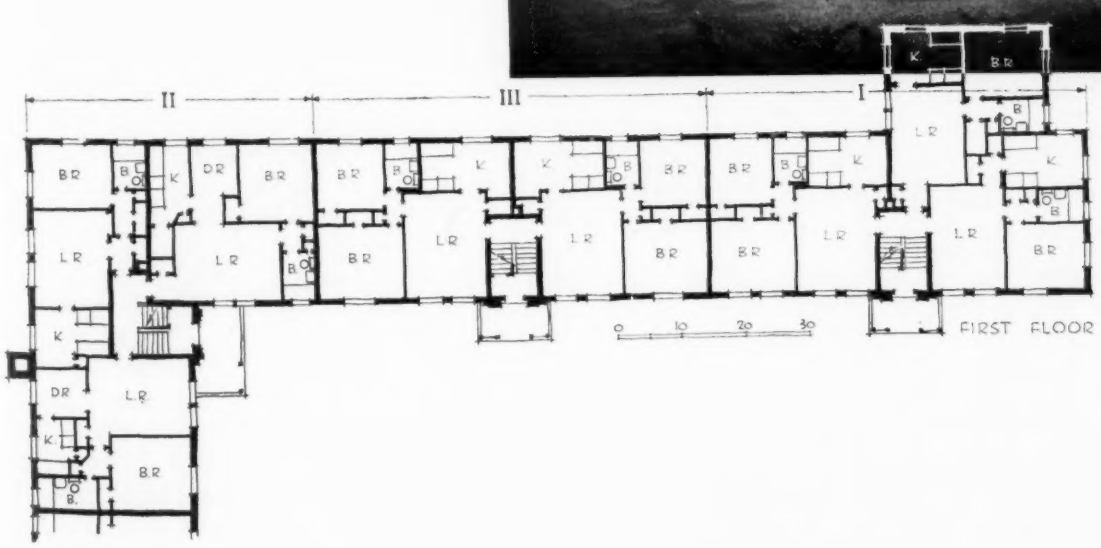
Floors are of wood joist construction; stairs are of wood in a masonry well, each stairway giving access to not more than three apartments per floor. The project was promoted by Galvin and Galvin, of Cleveland; owners and builders were the D & M Construction Company.







Three basic building units, some in reverse, serve for all buildings. Basement areas provide laundry facilities and drying rooms, as well as storage lockers for the tenants. Parking areas were provided instead of garages





LOW-COST EMERGENCY HOUSING







Rental Suggestion for the Northwest

Roi L. Morin, Architect

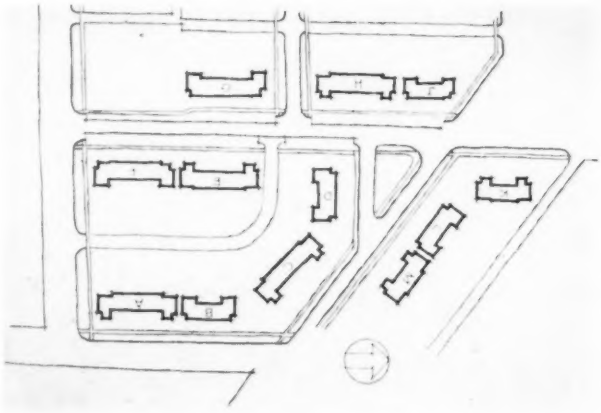
IF THE plans of this project have a familiar look, it is no doubt because you have seen something very similar in many a wartime USHA project, done for another housing emergency. In bringing them up in connection with this emergency, the architect reminds us that "the basic trouble with all housing theories is that they are not low-cost, and since costs have skyrocketed they don't even approach low-costs."

"The great bulk of small house designing today," he continues, "is a revolution from the 'Cape Cod' box — a design revolution, not an economic one. They still have front and back doors, carports, large glass areas, cantilevered overhangs and other such paraphernalia that certainly make the house more charming and livable than the Colonial, but also more expensive.

"These houses could have been built complete, ready for occupancy in 1941 for $1950 per 2-bedroom unit, and I believe they could still be built today for less than $3,000 (exclusive of site improvements in either case).

"They would be far better for veterans than the barracks or moved FPHA war housing they will have to take, or buy the $8,500 'Cape Cods.' "



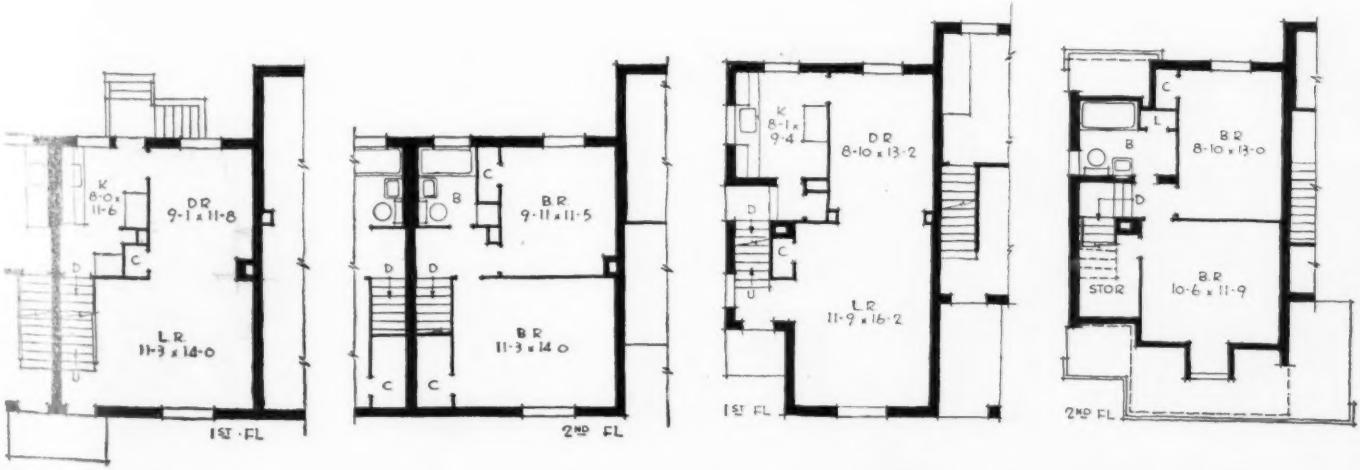


ROW HOUSES FOR SUBURBAN BLOCK

Green Fields Homes, Desplaines, Illinois

Perkins and Will, Architects

ALREADY completed, and no doubt bursting at the seams with tenants, this project has much to recommend it for the current emergency. The architects were careful not to offer it here as representing great forward strides in design, contenting themselves with mumbling something about "conventional plus." Obviously, however, it would score high in popularity with the veteran and his family who wanted good housing instead of the doubtful privilege of buying a cheaply built little bungalow. And this suburb of Chicago should be happy to avoid by this many units the rash of rickety bungalows that already blight many near-by areas. The site plan was pre-frozen by the existing street and alley system. There are 60 units in 12 row-type buildings.



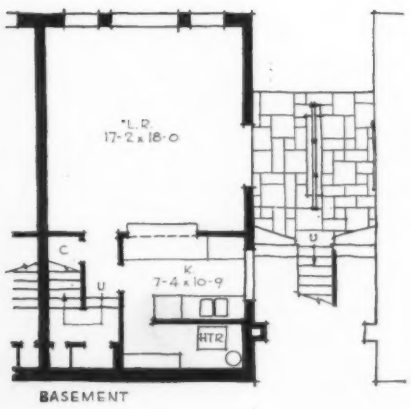
FOUR-FAMILY UNIT FOR A HILLY PLOT



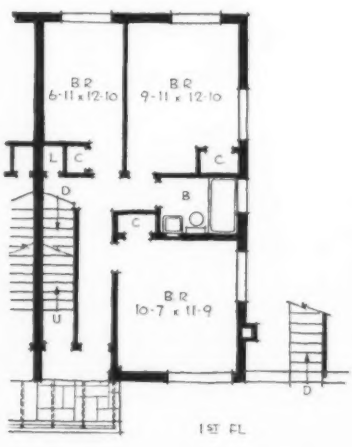
Modern Version of Two-family Flat, Washington, D. C.

Berla and Abel, Architects

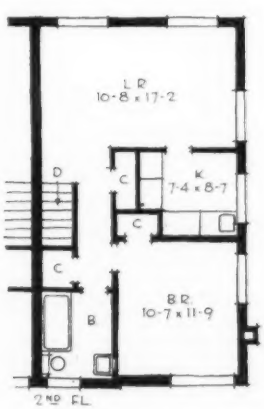
HERE is a type of rental housing which could go up speedily and which would save a considerable amount of materials, as against individual detached houses. It is a newer version of the "semi-detached, two-family flat," this one designed to develop a plot sloping sharply down from the street. Thus the "owner's" quarters become a duplex unit with kitchen and living room on the garden floor, three bedrooms on the first floor. The second story becomes a one-bedroom apartment for rental.



BASEMENT

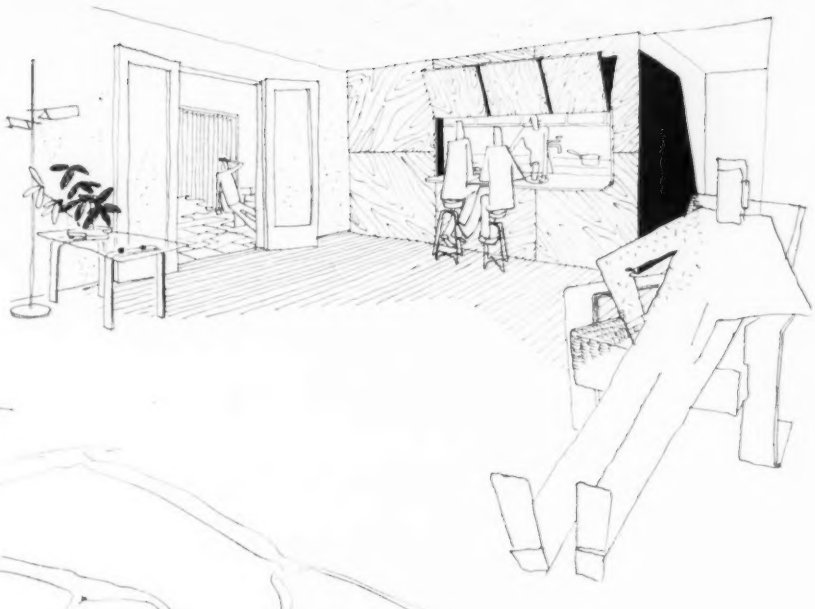


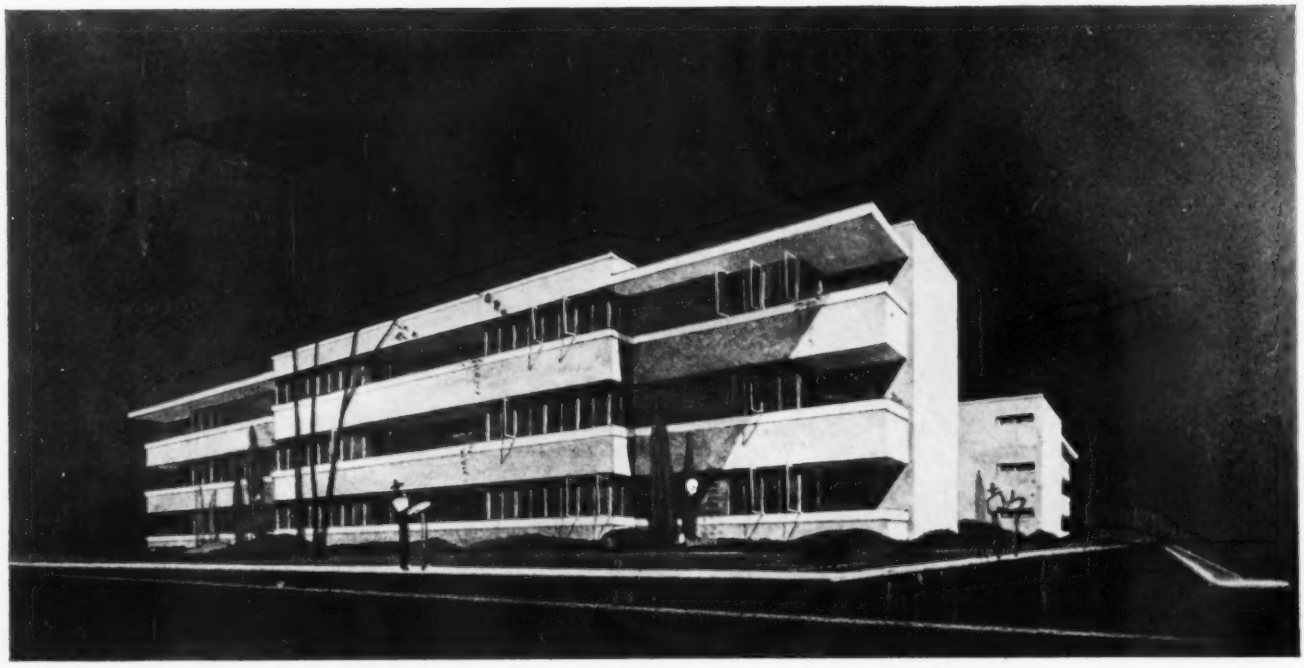
1ST FL.



2ND FL.

The little sketch illustrates quite graphically one possible use of the counter opening in the kitchen wall. The dining table suggests it might be used for serving food as well as drinks





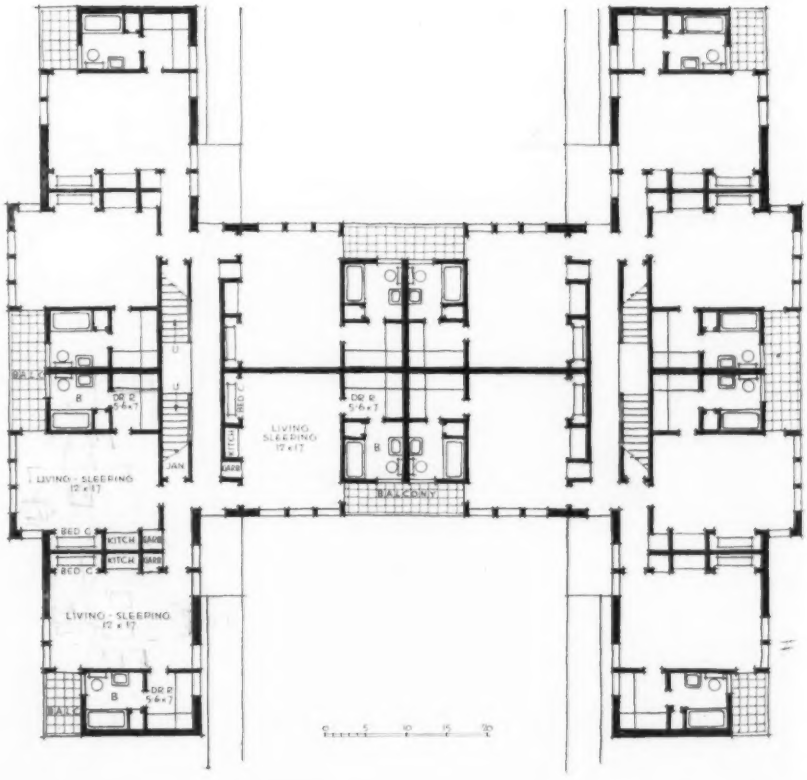
EFFICIENCY UNITS FOR TEXAS

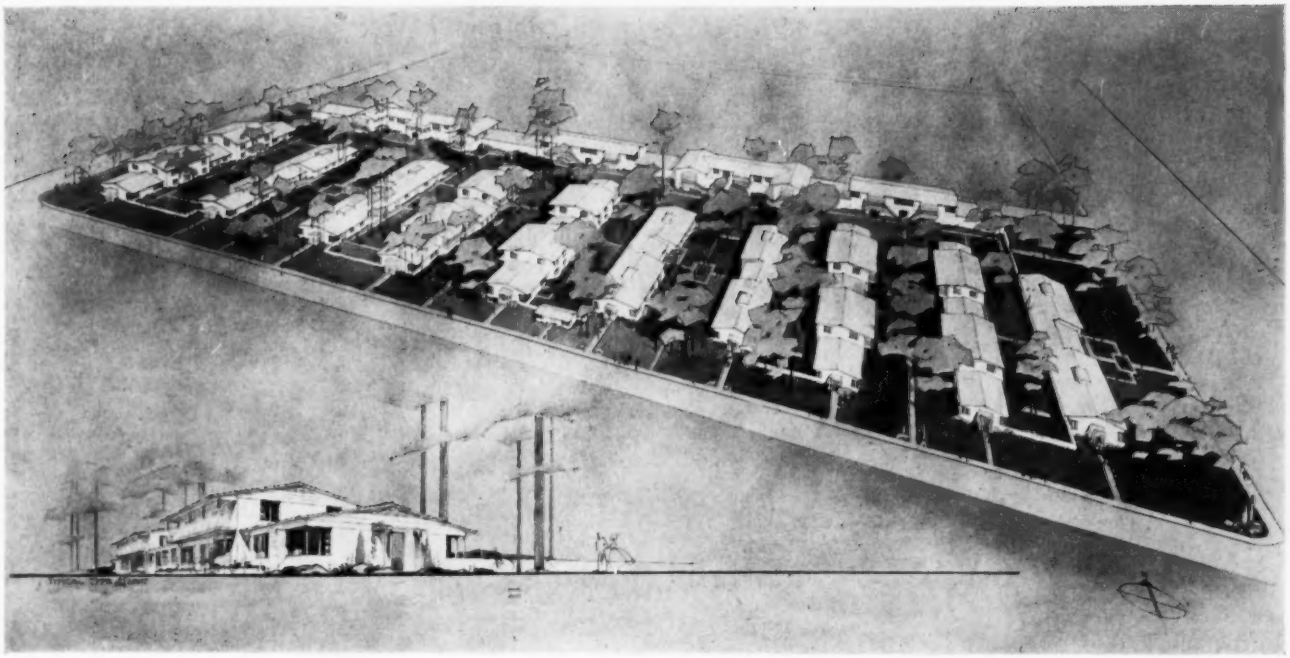
For a Downtown Site in Houston, Texas

MacKie and Kamrath, Architects

MANY a soldier's mother of today learned her cooking in an efficiency apartment of yesterday, and many a G.I. bride would gladly prefer the modern efficiency apartment to her mother-in-law's supervision. Here is an up-to-date version of the familiar little dwelling unit, with sun-shaded balconies and the esthetic values of a new generation. And with twelve of these units per floor, this building would do more than its share toward relieving a terrific shortage of living units for the small family entity.

Exterior walls will be brick and tile; interior walls of masonry and plywood. It is planned for a concrete slab foundation. Acoustic plaster will be used on ceilings, and party partitions sound insulated. Wall-type gas heaters in each apartment will suffice for the Houston climate. Floors will be carpeted; with asphalt tile in baths and kitchens.

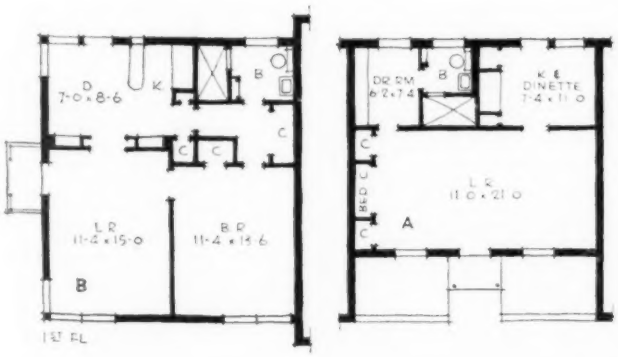




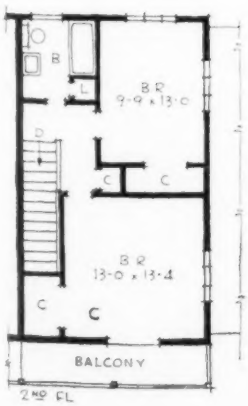
INDUSTRIAL HOUSING FOR TEXAS

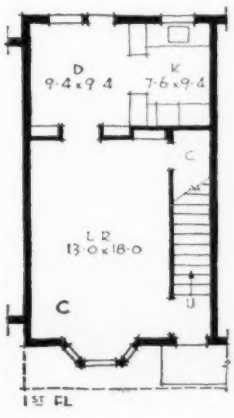
2900 Broadway Apartments, Houston, Texas

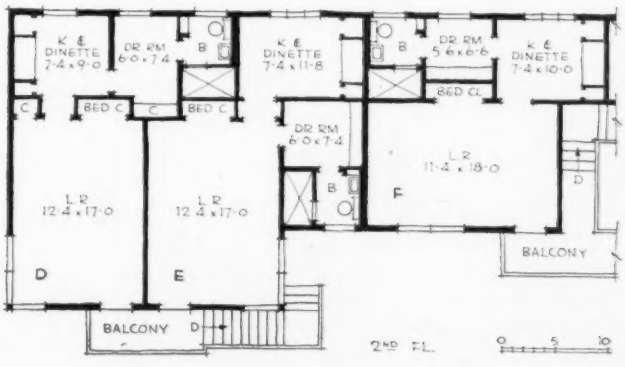
MacKie and Kamrath, Architects

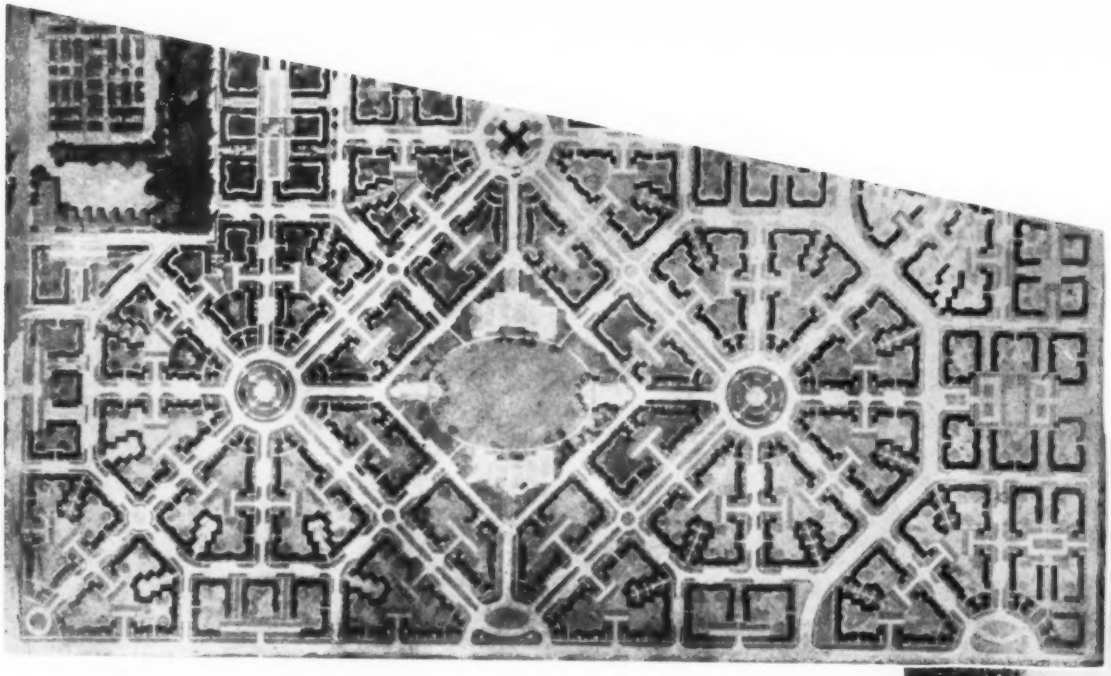


HERE the efficiency unit also appears, but mixed in with larger units. This project was planned for an industrial section of Houston, where workers needing housing are not necessarily veterans. The buildings will be erected on slab foundations, with wood frame superstructure and wood siding over insulated sheathing. Interiors will be of dry-wall type, with gypsum board and plywood. Roofs will have rock wool insulation, marble chip reflective surface, and attic ventilation.

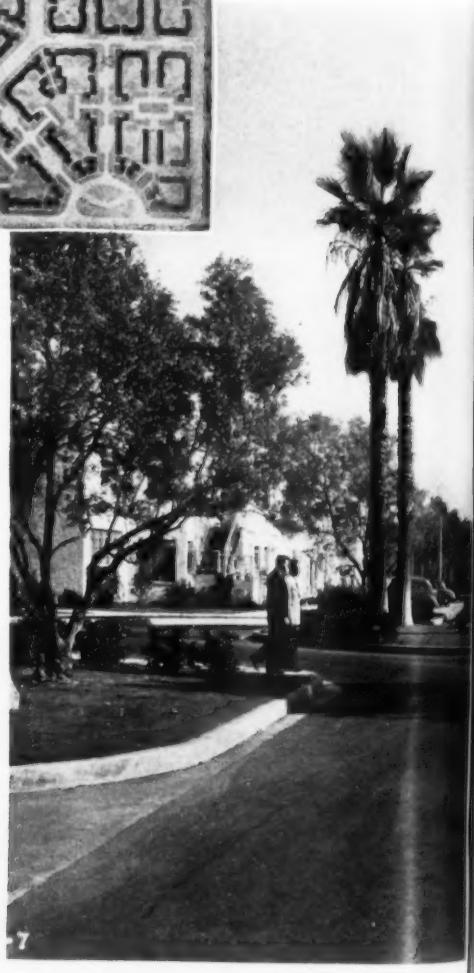








The original plan of Parklabrea (above) called for full development of the 173-acre property, but the exigencies of war cut the project in half. All buildings are two-story, arranged around patios in blocks radiating out from a 10½-acre central park





Large-scale projects such as this can hav good landscaping, conveniently locate garages, plenty of play areas for childre at a nominal development cost per un

PARKLABREA, LOS ANGELES

Investment building by Metropolitan Life Insurance Co.

Leonard Schultze and Associates, Architects



NORDSTROM Photos

ENCOURAGEMENT of large-scale apartment developments such as this one would be a shot of adrenalin for any housing program. This is the type of building that investment capital would like to do. If it is possible, there is plenty of capital waiting to do it: if it is not possible, perhaps the housing program should be reviewed. Certainly apartments like these are more apt to meet the needs — and the pocketbook — of the veteran than is the single-family, for-sale-only, small house.

Originally designed for 2,620 families, the project fell under the knife of wartime building restrictions and only 1,316 suites of from three and a half to six rooms were completed. As in Parkmerced and Parkfairfax, Metropolitan's similar developments in San Francisco and Alexandria, Va., the studio or duplex apartment is extensively used, with only the one-bedroom apartments all on one floor. The buildings are arranged in a broken line around the outer portions of the residential blocks, each group enclosing a patio-like area. Exteriors are brick, painted light gray. Living room and bedroom floors are hardwood parquet blocks laid in mastic, kitchen floors are covered in linoleum. Bathrooms have tile floors and tile wainscoting. Gas ranges and electric refrigerators are among the items of equipment supplied.







Typical apartment layouts (above) show good-sized rooms, plenty of closet space. All living rooms face the center patios, have large casement windows and venetian blinds. Bedrooms are on second floor

"It seems about time to point out that there are very important sectors in our economy where excellent labor-relationships exist, and to insist that sound practices and good relationships are just as newsworthy as criticisms, complaints, stories of work-stoppages and uneconomic practices."

COLLECTIVE BARGAINING AT WORK

By Thomas S. Holden, President

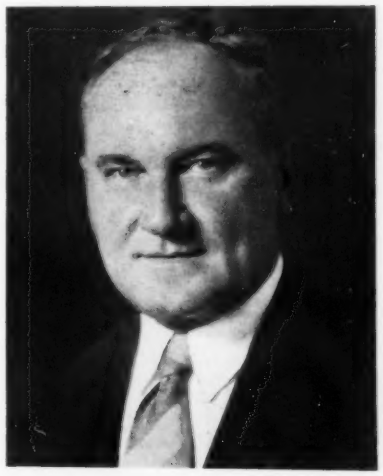
F. W. Dodge Corporation

INDUSTRIAL peace and sound employer-employee relationships in New York's building industry during the next five years are the objectives of the master agreement recently consummated by the Building Trades Employers' Association of New York City and the Building and Construction Trades Council of Greater New York and Long Island.

Hailed by George Meany, secretary-treasurer of the American Federation of Labor, who signed the document as a witness, as "a real triumph for the American system of collective bargaining," the agreement resulted from many months of discussion and negotiation by a 14-man joint committee of the two organizations. It was ratified by 23 constituent member associations of the BTEA and 26 constituent unions of the Council. Arrival at this result through established bargaining procedures was no mean achievement in a period of nation-wide labor unrest, when one great American industry after another was beset by excessive wage demands, strikes and work stoppages. As Mr. Meany said, there was no coercion or threat in the New York building industry, no policeman or political party involved in bringing labor and management together.

In his enthusiasm, Mr. Meany overlooked one strike threat. The Council threatened a general building industry strike on December 28, 1945, when the Wage Adjustment Board in Washington (which retained jurisdiction over construction industry wage agreements after wage controls in other industries had been abandoned) demurred on approval of the holiday and welfare fund provisions of the master agreement. Employers of the negotiating committee joined the labor members in convincing the Wage Adjustment Board that these provisions should be approved.

Peter W. Eller, President, Building Trades Employers'Association; President, Thompson Starrett Co., Inc.



"We find so many benefits to the construction industry, labor, the investor and the public generally in this agreement that it is difficult to give precedence to any particular feature.

"To be able to make advance estimates of labor costs, knowing that projects once started will proceed, so far as labor is concerned, is of great assistance to building trades employers and to owners."

INFLUENCE IS SPREADING

The preamble to the agreement is itself highly significant of the genuinely cooperative spirit that animated negotiators on both sides of the table. It says: "Desiring to insure a continuance of the harmonious and amicable relations now existing between labor and management in the building and construction industry of the New York City area; and, in order to provide a working understanding for our mutual benefit and protection, we, of labor and management, have dedicated our joint efforts to a practical partnership within the framework of this master agreement."



BACHRACH Photo

Max Foley, Firm member, Voorhees, Walker, Foley & Smith, Architects and Engineers; President, New York Building Congress; Chairman, Building Trades Apprentice Commission of New York

"The New York Building Congress has officially congratulated both the Building Trades Employers' Association and the Construction Trades Council of Greater New York and Long Island on the formulation and adoption of their new master agreement.

"In our membership are included architects, engineers, financial and real estate men, general contractors, subcontractors, material and equipment men and representatives of organized labor—all sharing an interest in the creation of a healthy situation designed to encourage construction of needed building in this community.

"We hail this agreement as a significant move toward this objective."

Influence of the master agreement has already spread from building into heavy engineering construction activity in New York City. It was largely followed as a pattern for the recent pact between the Heavy Construction Council and the General Contractors Association, the organizations representing respectively the unions and the employers engaged primarily in heavy engineering work. It has been reported that New York's master agreement is being actively studied and discussed in a number of other cities with a view to working out similar arrangements.

LABOR MAKES SPECIFIC GAINS

The agreement outlaws strikes and lockouts, establishes wage increases in accordance with the Little Steel formula, standardizes the workday as seven hours and the work week as five days, strengthens existing machinery for arbitration of jurisdictional and other disputes, sets up a permanent industry board with the function of regulation of the industry and general enforcement of the master agreement.

Labor gains certain new advantages, besides its increased pay-scale. For the first time building trades workers may receive standard pay for holidays upon which no work is done, the six holidays to which this applies being New Year's, Memorial Day, Fourth of July, Labor Day, Thanksgiving and Christmas. Work done on any of these holidays, under emergency permission granted by the Industry Board, is to be paid for at the established premium rates for overtime. The same overtime scale applies to work done on five other recognized holidays legal in New York State.

Under the novel provision for holiday pay, unions are given the option of cash in the pockets of their members in payment for the unworked holidays, or of the establishment of a fund financed by an industry-wide pay-roll tax of 3 per cent, but may not receive both sets of benefits. The proposed fund would be used to purchase insurance, hospitalization, medical, sick benefits, etc.; it would be under the protection, supervision and control of the Industry Board.

SO ALSO DO EMPLOYERS AND INVESTORS

Advantages to the building industry and the investing public are considerable. Peter W. Eller, president of the BTEA, who is also president of Thompson Starrett Company, Inc., finds in the agreement "so many benefits to the construction industry, labor, the investor and the public generally that it is difficult to give precedence to any particular feature." He has cited the advantage of the uniform seven-hour day, permitting efficient scheduling of work; the stabilized wage schedule and provisions for orderly review and revision at stated times (June 30 of each year from 1947 to 1950) giving investors a firm basis for calculating costs; the definition and control of maintenance and repair work and small house building, which have been provocative of disputes in the past; and the setting up of the industry board.

Furthermore, as part of the agreement, the Council and its constituent unions promise to furnish at all times sufficient men of the various trades to man the projects of BTEA members. The master agreement specifically recommends that "the several trade associations and unions jointly maintain apprenticeship systems which will provide an adequate force of skilled mechanics." It further recommends that the various and several trade associations and their unions provide for the employment of older workmen, partially incapacitated men, returning veterans and superannuated men.

Of major importance is the improved machinery provided for settling jurisdictional disputes. Work stoppages due to such disputes constitute what is probably the most frequently criticized feature of American trade-unionism. Since the additional machinery, residing in the powers of the newly created industrial board, represents the culmination of years of development in the handling of this knotty problem, a brief historical review is in order.

IT BEGAN BACK IN 1903

In May of 1903, the industry in New York was paralyzed by "irresponsible combinations acting through a tyrannical board of walking delegates or business agents." In that month there was organized the Building Trades Employers' Association which found it incumbent to issue a declaration of principles. This declaration stated: "It shall be our duty to avert sympathetic strikes, including the attacks upon individual firms or corporations, as well as the arbitrary attitude of the business agents; to eliminate the opportunity for extortion and bribery; to settle all questions as to jurisdiction of trade; to secure proper relations between skilled and unskilled labor; to establish proper courts of arbitration in order to accomplish the above results, and in general to provide ways and means to enable the members of this association and those employed by them, to lawfully prosecute their business without unnecessary interruption, financial loss or humiliation."

In June of 1903 the employers' group tendered to the unions a plan of arbitration which prohibited strikes and lockouts and provided for the arbitration of disputes by the individual trades through their own arbitration boards, and, in addition, provided for a higher court, called the General Arbitration Board, for the settlement of all disputes between employers and employees or any question in mutual interest. This plan was accepted by the unions in July of 1903, and since that time has served as the basic instrument of employer-employee relations in New York City.

However, there existed certain weaknesses in the relationships of the employers and employees which gave rise to several subsequent major strikes. Each of these strikes emphasized the weaknesses which now seem to have been eliminated through the new master agreement.

For example, in the summer of 1919, mechanics in five trades engaged in outlaw strikes. The unions themselves admitted their inability to control or influence these members. This led to the formation of a building trades council which for the first time permitted of some solidarity on the part of the union officials in dealing with their members. An agreement with the Building Trades Employers' Association was made by the Council, and this led to settlement of the strikes.

Since that time there have been a few trade-wise strikes of bricklayers, plumbers, painters and others, but on the whole the Plan of Arbitration, adopted in 1903 and amended in 1905, has served as an efficient mechanism in dispute settlement.

Howard McSpedon, President, Building and Construction Trades Council



ALEXANDER ARCHER Photo

"Almost complete elimination of work stoppages due to jurisdictional disputes should result from our new agreement with the Building Trades Employers' Association.

"The seven hour day and introduction of modern power tools in many of our unions are aimed to provide high labor efficiency on the job while our new agreement is in effect.

"At present we have a labor supply in New York adequate to handle building construction at the annual rate equal to 1928-1929. Even so, many of our unions are adding many apprentices to their ranks right now."

PRINCIPAL FEATURES OF THE NEW YORK MASTER AGREEMENT

THE agreement, signed on February 11, 1946, and made retroactive to January 1, 1946, is between the Building Trades Employers' Association of New York, which has 19 constituent trade associations, and the Building and Construction Trades Council of Greater New York and Long Island, which has 26 constituent unions.

Agreement provides for the closed shop, no strikes, no lockouts.



Signing the master agreement; seated, left to right: Thomas A. Murray, president, State Federation of Labor; Christian G. Norman, chairman, Board of Governors, Building Trades Employers' Association; Howard McSpedon, president, Building and Construction Trades Council; Peter W. Eller, president, BTEA, and president, Thompson Starrett Co.; standing, left to right: Arthur D. Hill, Jr., chairman, Wage Adjustment Board; John Splain, City Commissioner of Public Works; Hugh S. Robertson, executive manager, Rockefeller Center, Inc.; William G. Wheeler, secretary, BTEA; and William J. McSorley, president, Lathers International Union

WAGE INCREASES — Hourly rates for mechanics, helpers and laborers increased 15 per cent over prevailing or agreement rates existing in the area on January 1, 1941, with a maximum increase for any trade of 25 cents an hour.

To be in effect until June 30, 1947. Subject to review and revision by the Industry Board on that date, or on any June 30 thereafter during the life of the agreement, which continues to June 30, 1950.

HOLIDAYS — Employees engaged in work during the pay-roll week in which one of six specified holidays occurs to be paid full time without working; these holidays are New Year's, Memorial Day, Fourth of July, Labor Day, Thanksgiving and Christmas. Permission to work on any of the above six holidays, due to an emergency, may be granted by the Industry Board, in which case the established premium rates for overtime shall be paid.

Granting of pay for holidays where no work is performed precludes any craft union from making an agreement with its employers on social benefits, or "fringe" increases. A suggested pay-roll tax for social benefits is included as an alternative to the provision for wage payments covering the six holidays.

Five other holidays are recognized, with the provision that work performed on those days shall be paid for at the established premium rates for overtime pay: Lincoln's Birthday, Washington's Birthday, Columbus Day, Election Day and Armistice Day.

HOURS — The standard work-day is set at 7 hours, the work-week 5 days; premium rates for overtime as provided for in each of the various trade agreements.

INDUSTRY BOARD — A permanent Industry Board, to be established by the executive committees of the BTEA and the Council, shall regulate the industry and enforce the master agreement. The Board will interpret provisions of the agreement and adjust all disputes arising thereunder; its decisions to be binding on all parties to the agreement.

The Board consists of a representative of each trade union and each trade association under agreement and the executive committees of the BTEA and the Council; its powers may be delegated to committees.

PAY-ROLL TAX — A 3 per cent pay-roll tax agreement is suggested as a possible alternative to payment for six holidays not worked. An industry-wide pay-roll tax would be paid by every employer of each trade into a welfare fund, which would be used to purchase insurance, hospitalization, medical, sick benefits, etc. The welfare fund and methods of collection would at all times be under the protection, supervision and control of the Industry Board.

WAGE RATE SCHEDULE

Trade Classification	Hourly Rates Old	New
Asbestos Workers	$2.00	$2.25
Asbestos Workers Helpers	1.50	1.725
Boilermakers	2.00	2.25
Boilermakers Helpers	1.70	1.95
Blacksmiths	1.625	1.86⅞
Blacksmiths Helpers	1.125	1.29
Carpenters	1.85	2.10
Cement Masons	1.85	2.10
Derrickmen & Riggers	1.65	1.89¾
Hoisting Engineers	2.00	2.25
Glaziers	1.88⅝	2.13⅛
Glass Workers, Decorative	1.50	1.72½
Marble Carvers	2.22½	2.25*
Marble Cutters and Setters	1.88	2.10*
Marble Polishers	1.69	1.90*
Marble Helpers	1.46¾	1.70*
Metallic Lathers	1.85	2.10
Ornamental Iron Workers	1.90	2.10
Ornamental Iron Workers Helpers	1.50	1.72½
Plumbers (Brooklyn & Queens)	2.00	2.25
Plumbers Helpers (Bklyn & Queens)	1.50	1.72½
Riggers and Machinery Movers	1.75	2.00
Sheet Metal Workers	2.00	2.25
Slate & Tile Roofers	2.00	2.25
Slate & Tile Roofers Helpers	1.25	1.50
Steamfitters	2.00	2.25
Steamfitters Helpers	1.50	1.725
Stone Cutters	1.92⅝	2.17⅝
Stone Carvers	2.21¾	2.46¾
Stone Setters	2.00	2.25
Structural Iron Workers	2.00	2.2

* 8-hr. day

STRENGTHENED IN 1936

The mechanism was further strengthened upon solidification of the building labor groups in 1936, which brought the construction and building trades crafts (though not all locals) into the reorganized Building and Construction Trades Council of Greater New York, affiliated with the Building Trades Department of the American Federation of Labor. The new Council outlawed promiscuous stopping of work and was committed to the position that all disputes as to jurisdiction of trade would be adjusted in accordance with the Arbitration Plan.

To effectuate this, a board of mediation was established by understanding with the Council early in 1937. The board is composed of the chairman of the board of governors of the Building Trades Employers' Association and the president of the Building and Construction Trades Council. This board, without the power of decision, hears disputants and endeavors to adjust their differences by mediation. Upon failure of the parties to agree to an amicable settlement, the aggrieved party is privileged to enter a written complaint to the Building Trades Employers' Association and to request a formal hearing and decision by its executive committee. During the years 1937–1945 the board of mediation heard 150 cases and was successful in settling most of them, there being only a few reaching the executive committee.

INDUSTRY BOARD A NEW DEVICE

The new master agreement, by setting up for the first time an industry board,* consisting of a representative of each trade union and trade association under agreement, and the respective executive committees, seems now to provide an effective instrument which former agreements lacked. The function of the board shall be "the regulation of the industry and the general enforcement of this agreement." The Industry Board "shall interpret its (the agreement's) provisions and shall adjust all disputes arising hereunder, regardless of the source of the complaints. Its decisions shall be final and binding on the parties hereto. Should the Board by unit voting fail to agree on any matter before it for two consecutive daily meetings, the Board shall select an umpire and each side shall make its arguments before the umpire, whose decision shall be final and binding upon all the parties. The Board may be increased should either side decide, and its powers may be delegated to committees. The Board shall have the power to take any and all steps to effectuate the purpose of the agreement."

INDUSTRY SOLIDARITY AND TEAMWORK

The background history of the unusually satisfactory management-employee relationship in New York's construction industry is incomplete without the story of another organization which had no direct part in negotiating this master agreement or any previous agreement. That organization is the New York Building Congress, Inc., soon to celebrate the 25th anniversary of its founding.

From its inception, labor union officials and members have participated in all phases of this organization's activities, along with architects, engineers, general and subcontractors, material producers and suppliers, real estate and financial men. Among the activities it has conducted or sponsored have been apprenticeship training programs and awards to mechanics for outstanding excellence in craftsmanship. Craftsmen who have received these awards (a gold button and a certificate) on

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Christian G. Norman, Chairman, Board of Governors, Building Trades Employers' Association; Temporary Chairman, Industry Board



BLANK & STOLLER, INC. Photo

"Steadily for many years, relations between building labor and building trades employers in the New York area have been improving. In my judgment a real public service has resulted.

"As one identified with this progress since 1902, I am particularly pleased with our most recent agreement. This should pave the way for stability and harmony during a period in which much needed building is to be done.

"I'd like to see the same pattern adopted in other communities too, for it seems to me that there is no better single means for insuring that our organized building industry shall serve the public most effectively in every part of the country."

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* *Temporary chairman is Christian G. Norman, since 1902 active in labor-management relations. William G. Wheeler, secretary, Building Trade Employers' Assn., has been named temporary secretary.*

the quality building jobs of New York are enrolled as honorary members of the Congress. An impressive bronze tablet in the lobby of the Empire State Building commemorates for all time the members of the many trades who received awards for excellent performance in their crafts on that particular job. These activities, and others of general industry interest, have developed a spirit of friendly understanding, solidarity and teamwork — the idea that all are members of the same club — as between organized labor and the other elements of the industry, that is rather unique in the American scene. Ordinarily when government, federal, state or local, takes up a question involving building in New York it is presented with a solid front by labor and by contractors.

It is of interest to note that architects were prominent in the first organization of the Congress, and have continued so throughout the history of the organization. Six out of the seven presidents who have guided the organization's affairs have been practicing architects. Howard McSpedon, signer of the master agreement as president of the Building and Construction Trades Council, is currently a vice president of the Congress. The two other signers on the labor side have both served as vice presidents and board members of the Congress. They are John J. Brennan, secretary-treasurer of the Council, and Charles W. Hanson, vice president of the Council, who is also president of the New York District Council of Carpenters and Joiners of America.

POWER TOOLS ACCEPTED

Next to jurisdictional disputes, resistance by unions to acceptance of modern labor saving methods and machinery is perhaps the subject of most frequent criticism. A significant development on this front was the recent trade agreement entered into between the New York electrical contractors and Local 3 of the International Brotherhood of Electrical Workers (AF of L). This agreement, which is not a part of the master agreement, makes specific provision for the unrestricted use of the most modern technological methods and of high-speed, labor-saving tools, many of which have been banned hitherto. This agreement affects 364 electrical contractors and over 10,000 skilled electrical construction workers in the New York City area. Further evidence of a liberalized attitude in the electrical trades is shown by voluntary offer of the electrical workers to relinquish their contractual right to time and a half for overtime and to work an additional shift of seven hours at the same rate as the daytime shift until the veterans' housing shortage abates. The electricians' agreement is administered by the Joint Industry Board of the Electrical Industry, representing both labor and management. Chairman of this Joint Industry Board is A. Lincoln Bush, president of Belmont Electric Co., Inc.

Asked why the master agreement makes no mention of labor-saving tools and methods, John J. Brennan, secretary-treasurer of the Council, cited two reasons. First was that such matters belong in the jurisdiction of the several unions and their employer groups. Second was that acceptance of labor-saving methods has long been the rule rather than the exception in New York's building trades.

HIGHER WAGES — SAME COST

Among examples cited was one from Mr. Brennan's own trade, the cement masons. The story is worth telling here.

In the 1907–1909 period, before mechanical cement mixers came into general use, cement floors were laid largely by hand. New York wage scale for cement masons at that time was $5.00 a day, for helpers $3.00 a day; cinders were had for the price of hauling them to the job, perhaps 50 cents a yard. Cost of a 3-in. cinder concrete, 1-in. finished cement floor was 25 cents a square foot.

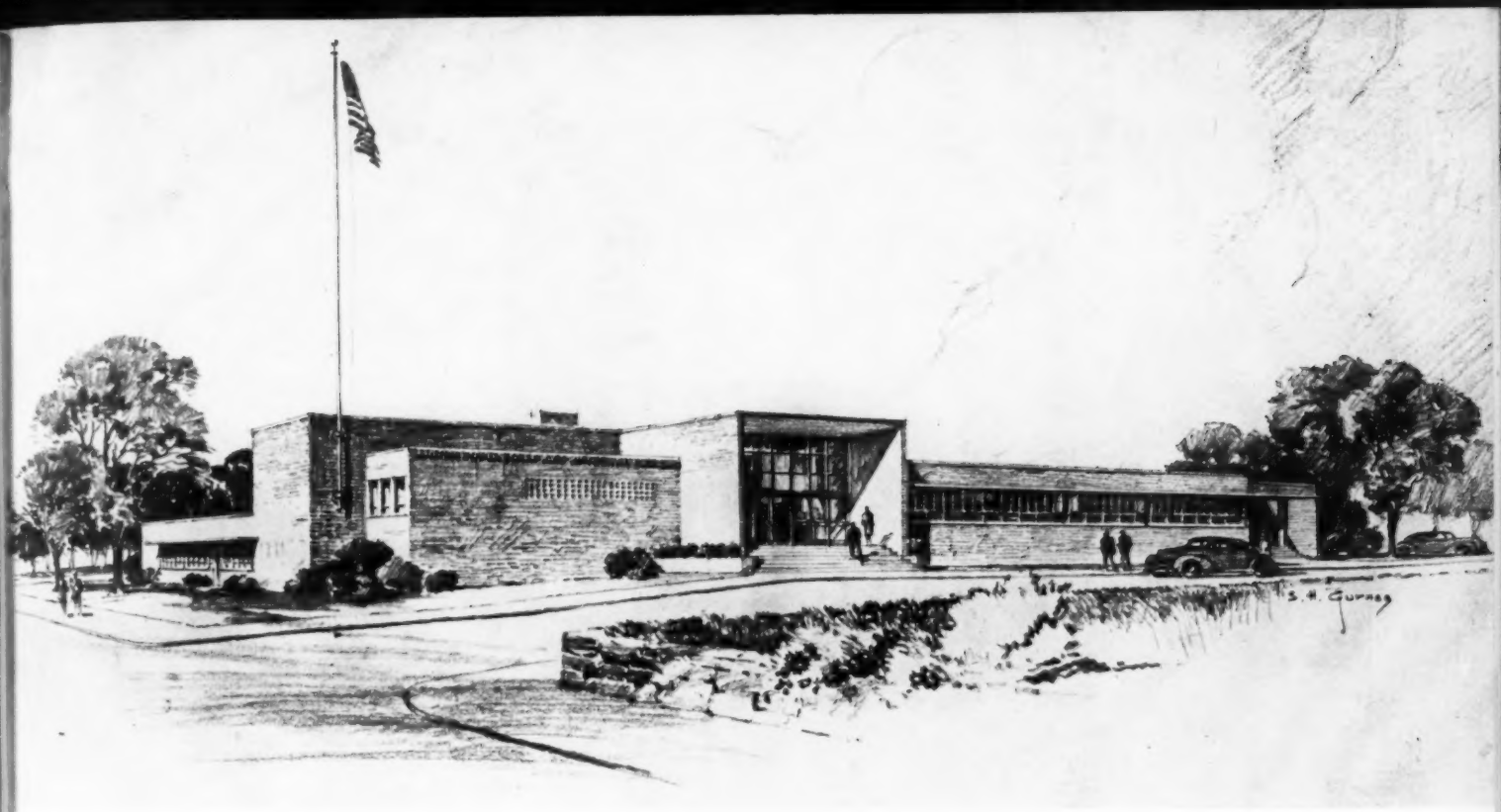
Just before the latest wage increase, cement masons were getting $12.95 a day, helpers $8.40 a day; cinders cost around $1.75 a yard. Cost of a finished cement floor was still 25 cents a square foot.

The process had been progressively mechanized in the intervening period. In addition to mechanical mixers, the Kelly floating machine has been in use for about 15 years. It does the work of three men. There is now in the stage of experimental development a troweling machine, a rotary machine with three troweling blades. This or some other mechanical device may quite possibly again offset the latest wage and material increases and hold the cost of the finished floor to 25 cents.

A comprehensive study of technological developments in the building trades would doubtless reveal many similar examples. New York's building trade workers are well paid. They are generally highly skilled, with great pride of craftsmanship, usually ambitious to work on the best jobs and for the best contractors. New York's designers and builders have for 50 years shown extraordinary capacity in devising design and building procedures of ever-increasing efficiency. In the field of modern urban-type buildings, teamwork between New York's architects, builders, special contractors and trades and skilled union craftsmen has achieved performance standards and quality buildings unsurpassed anywhere in the world.

It is not the purpose of this article to claim that there are no uneconomic practices or abuses in New York's building industry, or to claim that the recent master agreement has ushered in a millennium in labor relations. It seems about time, however, to point out that there are very important sectors in our economy where excellent labor-relationships exist, and to insist that sound practices and good relationships are just as newsworthy as criticisms, complaints, stories of work-stoppages and belligerent controversy.

Arthur D. Hill, Jr., chairman of the national Wage Adjustment Board for the construction industry, has characterized the New York master agreement as the largest single contribution to stabilization in the entire country since wage controls were set up for the industry.



Preliminary study for combined community building, municipal building, and Clinton Power Board offices, Clinton, Tenn., by the Tennessee State Planning Commission, assisted by the TVA Department of Regional Studies (Mario Bianculli, Chief Architect)

COMMUNITY BUILDINGS

Architectural Record's Building Types Study Number 113

Special acknowledgment is made to Mr. Hermann Field, of the office of Antonin Raymond; David Danzig and Philip G. Bartlett of USO; Ely Jacques Kahn, A.I.A.; Dr. Mary Goldwater of FPHA; Samuel Nock of the YMCA; Arthur Williams of NRA; Rudolph Mock, now chief architect of TVA, and Roland Wank, formerly chief architect

A COMMUNITY building is what a housing development requires to convert it into a neighborhood. A community building can also be designed with such dignity as to make it a fitting memorial to the war casualties of the town. In more ways than one, a community building is a necessary and appropriate type of structure to be planned now.

The essential elements of a community building are surprisingly constant and easy to describe in view of the great diversity of the executed examples. For purposes of clear planning it is necessary only to separate out for first consideration those parts which are always present and needed. They form a core to which specialized provisions can be added, if desired, for recreation, health, education, commerce, or civic administration.



UNDERWOOD-STRATTON Photo



Photos courtesy of Y.M.C.A.

FASHIONS CHANGE BUT NEEDS REMAIN

Social entertainment in World War I was likely to take place either against the background of potted palms or of crude barns serving as Y.M.C.A. huts. In World War II, the USO building was conceived as a functional and architectural unit combined—at least to begin with, before the Army duly butchered the execution. In both cases there was an enormous impetus to more truly democratic comradeship, cutting across artificial barriers, setting an example of breadth in human relationships to be followed as an ideal in postwar community buildings

DESIGN ELEMENTS AND DESIGN CHARACTER FOR THE COMMUNITY BUILDING

In a community building as such, the one constant and indispensable element is a meeting room. Next in importance comes a group of rooms or areas that belong together, so that the omission of any one of them leaves a gap. They include: a *lounge;* a *kitchen* and *refreshment bar* connected in such a way as to serve both the lounge and the large meeting room; an *office* and *coat room* that can both be managed by a single person in slack periods, and are both placed where he has a clear view of all public areas (see plans at top of page 100); *toilets* and *wash rooms* and *lockers;* a *gymnasium* either combined with the meeting room or separate; *club rooms* smaller than the large meeting room. Less essential are additional rooms for *active games*, and *hobby rooms* or *craft rooms.*

Certain characteristics set off the community building from recreational and social centers that serve limited groups. Like the USO clubs that were so successful during the war, the community building needs an atmosphere and arrangement that break down barriers and encourage free mingling of all kinds of people. An "institutional" effect will defeat this. There must be a minimum of restraint and formality. Everybody must feel at home. Other requirements:

Well-planned accessibility and interior circulation
Indoor-outdoor flexibility
Interchangeability, wherever possible, of interior space; minimum of freezing of activities in social rooms
Must be expandable
Must be easy for a very few people to supervise
Should separate adults', childrens', infants' areas, also, separate noisy activities from quiet ones
Must be rugged in its finishes and easy to maintain
Elimination of all possible safety hazards, dark areas, steps without hand-rails, etc.

PLANNING A COMMUNITY BUILDING

First Step: Surveying the Need

IN THEORY, how large should a community building be in a given town? What should be in it? The architect has no ready-made way of forming a preliminary estimate. Figures such as the Y.M.C.A. uses, to predict what will be practical and acceptable for it, are workably accurate just because the agency which uses them is limited in purpose and appeal. Community buildings are unlimited. The National Recreation Association has formulated the following general recommendations.

A building within ½ mile to 1 mile of every home, depending on population density and ease of access.

A building for at least every 20,000 of population, regularly open for recreation use throughout the year.

The Association lists the following needs, to be provided "in public buildings of various types":

Auditorium or assembly hall for each 20,000 or less
Gymnasium for each 10,000 population or less
Social room or play room for each 10,000 or less
Lounge for informal reading or quiet games, for each 10,000 or less
Game room for each 10,000 or less
Arts and crafts workshop for each 10,000 or less
Club or multiple-use room for each 4,000 or less
Indoor swimming pool for each 50,000 or less

These "standards" are admittedly based on concurrence of opinion, not on measured data. So, also, data of the Federal Public Housing Administration, used during the war, are based on the arbitrary limitation in the Lanham Act which restricted expenditures for community facilities to 3 per cent of the total funds, though permitting leeway in allocation. Other formidable sounding "data" are equally inconclusive.

In practice, the procedure, as described by the experienced architect Roland Wank, is to obtain what the community leader or leaders are convinced they need. He mentions one town in which it was firmly believed that a juvenile delinquency problem would best be cured by a community roller-skating rink. In another, there was a chance to capitalize on a lake made more enjoyable to tourists as well as townspeople by a community recreation building. The Mormon church has wisely set up dance halls in many localities to hold its young people. In some rural communities, canning sprees are the social equivalent of urban bridge parties, but the activity is hot and messy, requiring facilities other than the community building kitchen used for chicken dinners. Many of these various purposes are not reconcilable in the same space. The architect must insist on sufficient flexibility so that the building will still be useful when community preferences shift, as they surely will, in the future along with population changes.

The survey. Not even the community leaders are likely to know accurately what facilities are already on hand. The architect is the best qualified person to make a preliminary survey, paid for by a community fund. The survey must list and map facilities on hand, with drawing radius. It must chart available land, and make recommendations for zoning and long-range plan. It must add up the requests of all the groups likely to contribute *continuing support* to the program, and then *cancel out duplicative requests* which are already served elsewhere, or can be served by the same space or facility used in rotation, thus arriving at the *net achievable* and efficient program. It is only fair that the architect be paid for employing this one dependable method of becoming familiar with the problem.

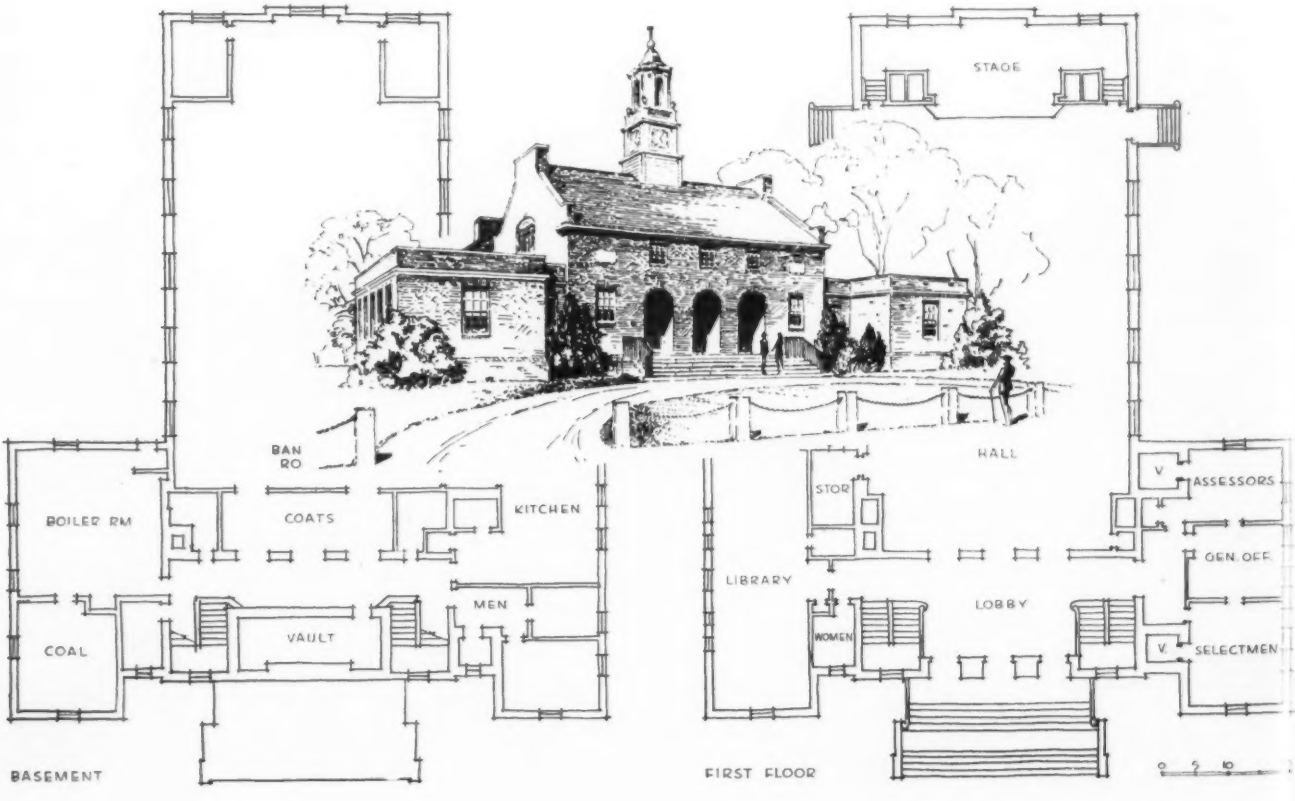
The map below is from a comprehensive survey made by William Lescaze, architect and planner, for the Scarsdale, New York area. A necessary prerequisite of the architect's report is that it be comprehensive, mention all groups and factors, but avoid becoming portentous and confusing





21,700,000 was the average monthly attendance at USO centers up to June, 1945. Many were modeled on these two basic plans by Ely Jacques Kahn and Robert Allan Jacobs, Architects

Plan and renderings below indicate a combined town hall and memorial building for Tewkesbury, Mass., as shown in drawings of Kilhan & Hopkins, Architects, in the RECORD *for December, 1919*



PLANNING A COMMUNITY BUILDING

Second Step: Organizing the basic elements

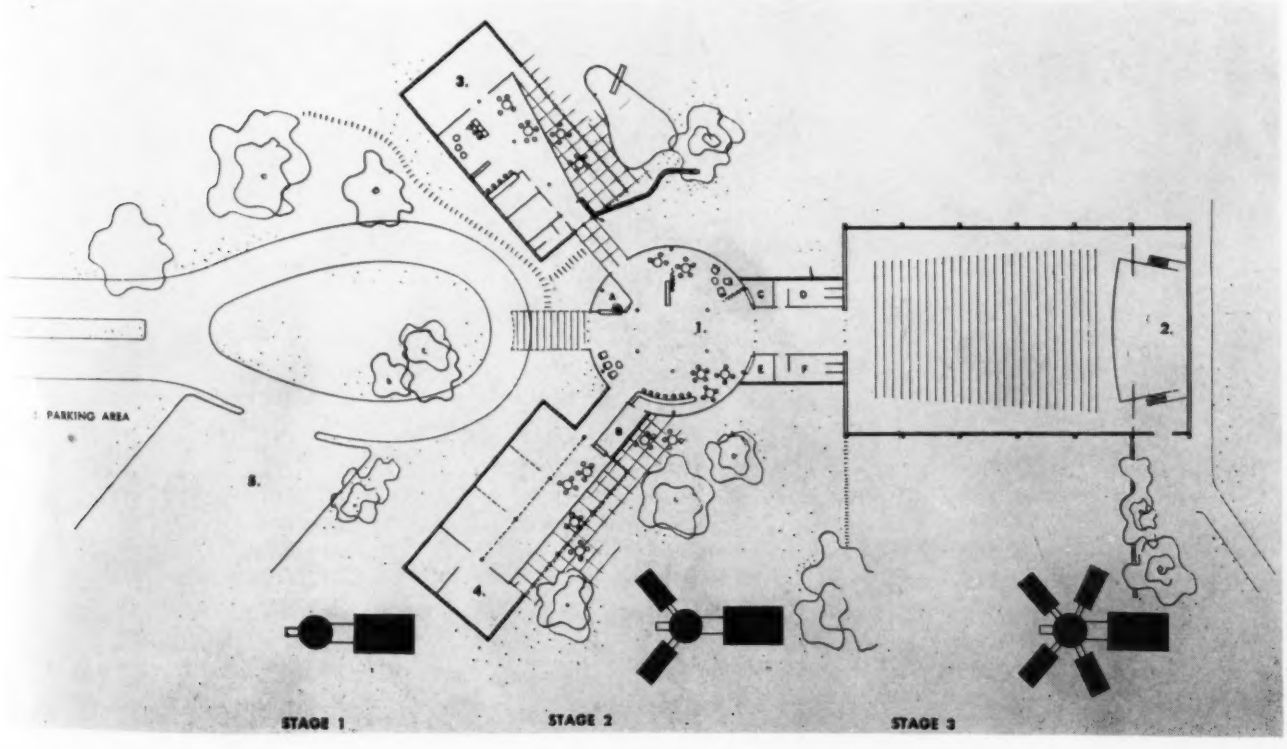
BY THE time correct relationships have been set up between the auditorium or meeting room, the lobby, the refreshments," declares an architect who has designed many community buildings, "there remains very little freedom of action." The office and cloak room must be where a very small force can manage both while keeping an eye on the lounge and all its entrances. The club room or rooms should be off in a quiet corner, isolated or insulated against auditorium noises. There may be a library, which will draw its books from a central branch and must have, like the kitchen, easy access for deliveries by truck without disturbance. Kitchen and refreshment bar should be so placed as to serve the lounge as well as the large hall. (Library plans vary greatly, and any "prototype" plans should be considered only as sources of ideas.)

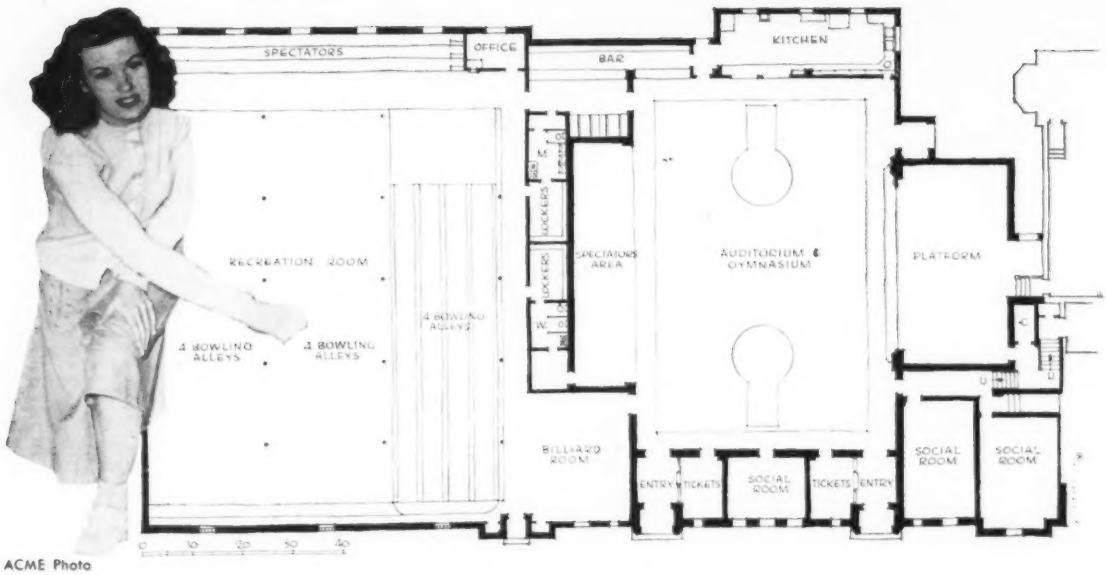
The *kitchen* raises a special problem. Local caterers are likely to oppose incorporation of a kitchen, but in the unanimous opinion of qualified persons, one will be needed in every successful community building. If none is included at the start, the architect had better so place a "club room" as to make future adaptation easy. Kitchen equipment is of a simple sort, suited to producing a simple menu ("chicken dinners"), with ample dish storage space and elbow room at the dish washing sink for many amateur helpers.

The *refreshment bar*, perhaps with a single soda-fountain, "*should be allotted four times as much space behind the counter as any manual calls for*" say those who have contended with pop-bottle accumulations. USO "Plan B" on opposite page shows a strategic position for refreshment service.

Illustrated on these two pages are some major plan types for community buildings. The USO plans shown boxed at the head of the opposite page are "A" and "C," which proved highly useful and successful in securing a high degree of social contact and activity. The type of plan seen at the bottom of the opposite page contrasts tellingly with the plan directly below. The older version is compact, symmetrical, monumental. The newer version is informal, rangy, meant to put people at ease. Both have their advantages, and the compact plan is by no means obsolete though enforced symmetry is.

In the plan on this page, the circular unit (1) is the SOCIAL CENTER, "unifying core of the building complex, with outdoor terrace for relaxation and eating in warm weather. In this Social Center several activities can be carried on simultaneously and in semi-privacy by the use of flexible partitions, or the whole space used for a single activity." (2) is the ASSEMBLY AND RECREATION CENTER for meetings and sports. (3) is the YOUNG PEOPLE'S CENTER with indoor and outdoor play facilities, or may be a child-care center. (4) is the ACTIVITIES CENTER, convertible into club rooms, craft rooms, or headquarters of special groups by the moving of partitions. The small black diagrams show possibilities of expansion in the future. The scheme is by Antonin Raymond, Architect, reproduced by courtesy of The American City.

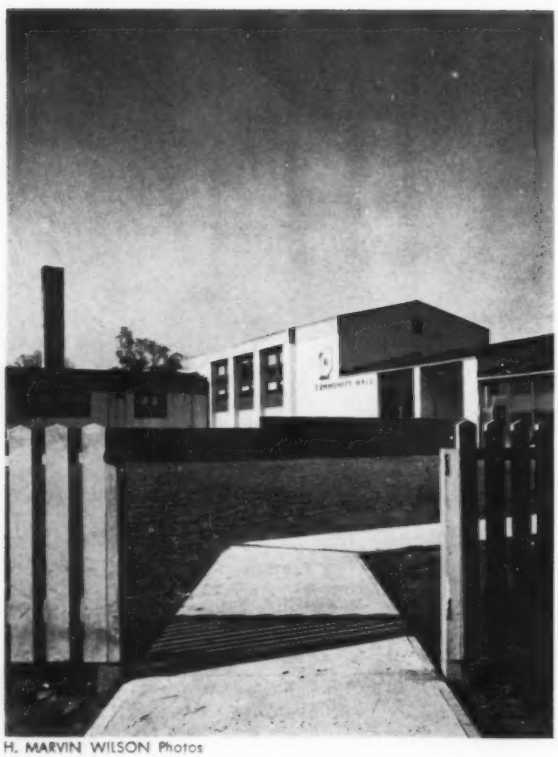




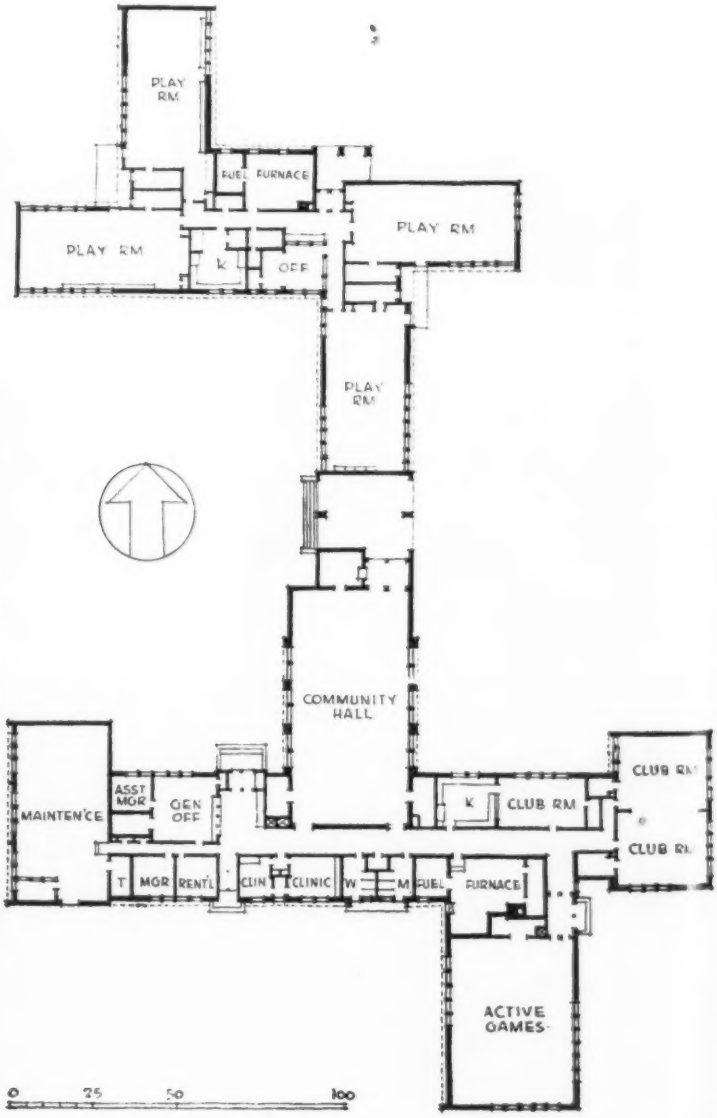
ACME Photo

Plan of St. John the Baptist Social Center, Akron, Ohio. G. W. Stickle, A.I.A., Architect





H. MARVIN WILSON Photos



PLANNING A COMMUNITY BUILDING

Third Step: Providing Required Facilities and Flexibility

USUAL first steps in extending community building facilities in the dimension of "active" games are along the lines of a combined gymnasium-auditorium. "Few building facilities," says the National Recreation Association, "especially in small communities, can be devoted to a single purpose."

Achievement, by this device, of a multiple-use objective requires skilful planning in balancing diverse factors. The combined facility will be expected to accommodate activities ranging from basketball and shuffleboard to Elk dinners and elaborate theatricals. A floor, seat, stage, lighting, and acoustical arrangement best suited to "Julius Caesar" obviously cannot in a successful trice be converted into an arena for a hot set-to of volleyball.

A hardy perennial is the type of plan which places the gym above an auditorium or banquet room, in full separation from one another. At the other extreme there is the one room serving both purposes. The walls and floor are adapted to gym use, windows are directly under the roof, usually occupying a depth equal to the roof trusses, the stage is at the far end, and the room is widened on one side to accommodate bleachers which are folded against the wall when the room is used as an auditorium. There may be incorporated a special plan for quick chair storage upon reconversion of the room into a gym (such as the understage storage devised by the architects Bennett & Hornbostel for Wheaton College and since manufactured by the American Seating Company). Such plans are proposed by National Recreation Association.

A very ingenious solution for combined use is seen on the opposite page, in the plan for a church recreational building in Cleveland, G. W. Stickle, Architect. By placing his stage platform at cross-axis to the gym floor, the architect brings it into a straight line of view from the sports bleachers, which accordingly serve like the balcony or "stadium" seats in a regular theater. Social rooms, in this plan, double as stage dressing rooms; the entry system is well set up not only for ticket taking but also for control and supervision of informal sports activity, a primary consideration in all recreational planning.

Bowling and billiard areas obviously do not lend themselves to flexibility. In the plan just mentioned, study of local bowling potential dictated provision of 12 alleys. ("Seldom is it possible," says the National Recreation Association, "to install fewer than four, requiring an area of approximately 30 by 100 ft.")

Other recommendations: a floor containing a standard basketball court is usually large enough for all community "active-game" requirements: 48 by 80 ft. minimum;* 60 by 90 ft. preferred; 20-ft. ceiling height desirable. (An area 60 by 90 will comfortably seat 800 people.) Location of combined gym-auditorium on or above ground floor; clerestory or transom window lighting (photo p. 107); wood truss, steel-web, or laminated-arch roof construction; folding bleachers; chair storage under stage; acoustical provisions for auditorium usage but allowing appropriate wall surfaces for sports (handball); non-slip floors for games, to which preparations can be applied for dancing (best: tongued and grooved hard maple on felt, laid parallel to short room axis; in the plan across-page, mastic is specified).

*Type studies reveal many community-room basketball floors more nearly 40 by 60 ft. — unorthodox but higher scoring!

Problems of Differing Age Groups

It is often proposed that the school itself be used as a community building, because so many of its rooms are readily adaptable. Yet, upon close examination, it is found that a separate community building has many advantages which are impossible of attainment in the school. For one thing, in most states and cities, the serving of alcoholic beverages, even beer, is prohibited on the school grounds; and in many neighborhoods a good sociable get-together is unthinkable without this accompaniment. Again, the school auditorium cannot be reserved far in advance, so that amateur theatrical societies may have all the time in the world to fabricate their own scenery. Once more, many adults are ashamed, no doubt wrongly, of being seen reading in a "kids' library." In brief, there are many restrictions put upon adult activity when it has to be fitted into an establishment meant primarily for children.

Child care centers attached to community buildings vary with the nature of the neighborhood. One type is meant to take care of very young children with working mothers. This type was fully worked out in connection with the Kaiser shipbuilding yards at Portland (AR, March, 1944, p. 84). Other types are used in more temporary fashion. Unless arrangements can be made for state, city, or private aid in meeting the teaching budget, it is rarely possible to set up a full-scale nursery, however modest, such as the model plan shown on page 108. Still another type of child care center is the one seen on the opposite page, as built at Berea, Ohio, from plans by J. Byers Hays and Wilbur Watson Associates. The arrangement shows a very well articulated adult center and child center in a sort of double pinwheel plan. All playrooms have cross-ventilation and maximum isolation of noise. (A more complete exposition is given in AR, June, 1945, p. 87.)

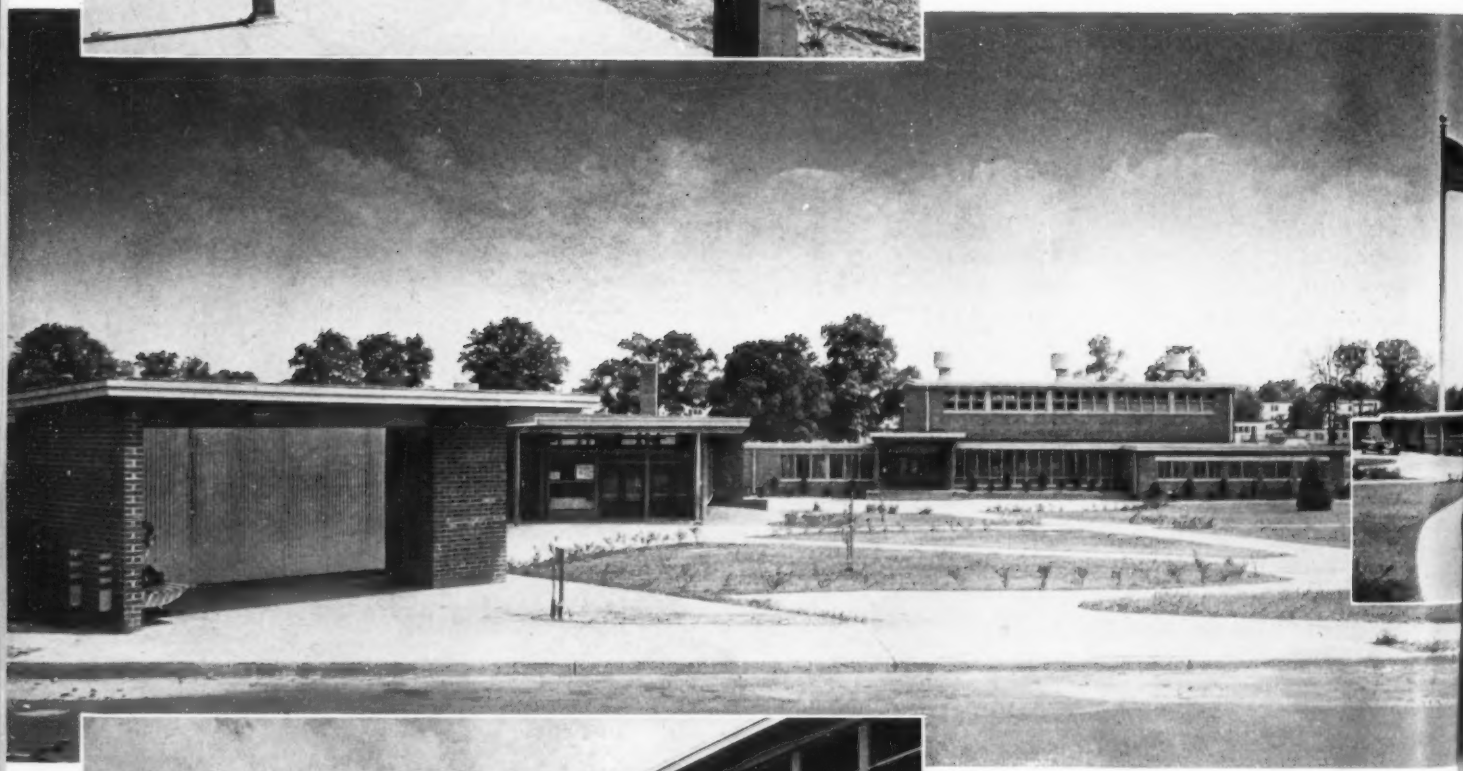
ILLUSTRATIONS, opposite page: Center, community building for Richard Allen Houses, FPHA development, Philadelphia, office of Paul Cret, Architects. Lower left photo, community building with child care center, Berea, Ohio, J. Byers Hays, Wilbur Watson and Associates, Architects; plan, right



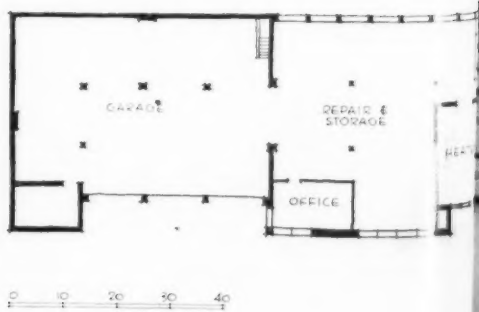
COMMUNITY

Winfield Park, Linden, N. J.

Kelly & Gruzen, Architects





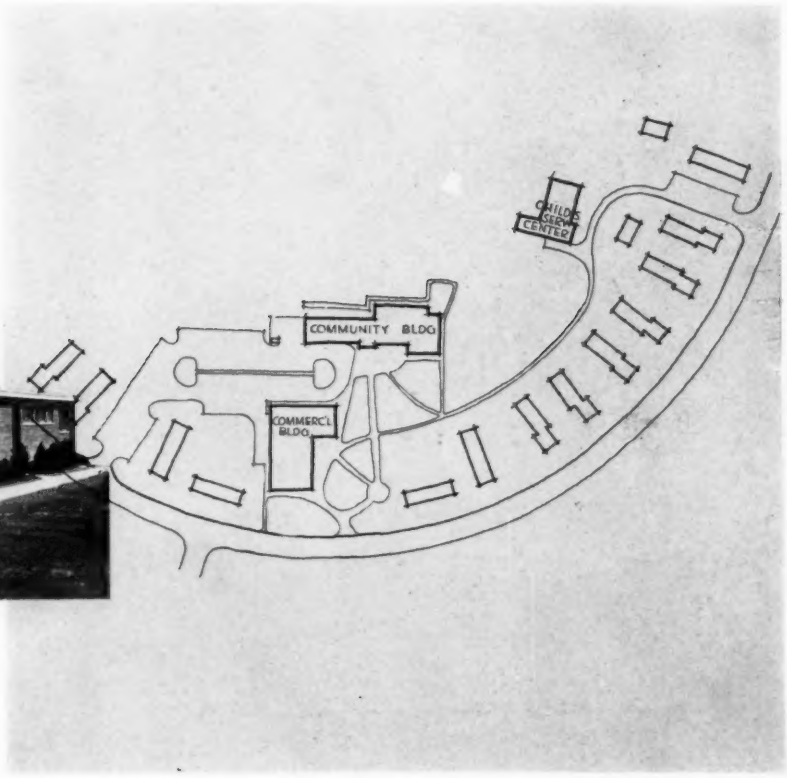


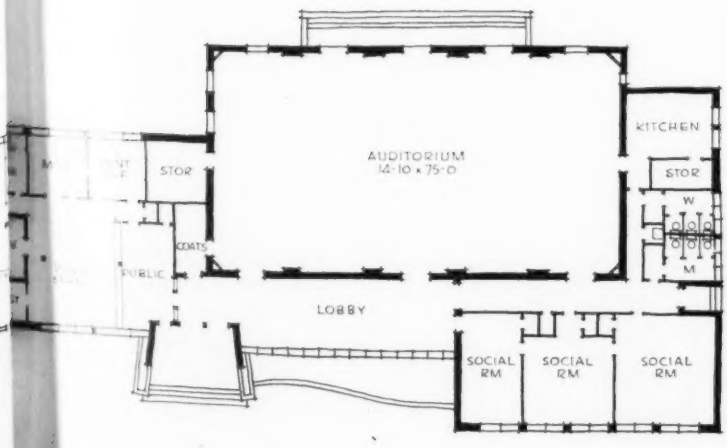
CENTER WITH STORES

ONE OF the most successful of the community centers with commercial facilities promulgated by government action during the war, this is attached to a 700-unit housing development executed under the Mutual Ownership program under Colonel Westbrook. The unique success of the commercial aspect may be explained, in part, by the plot plan (below), which shows the stores accessible to a main thoroughfare, so that they serve other shoppers besides those of the housing scheme. Also, as seen at the far left in the large view, a convenient and comfortable bus shelter makes this a favorite stop on lines of rapid transit. The commercial center is nicely visible, in a "splayed" orientation toward the highway, and is provided with the usual agreeable sheltered walk. The stores are cooperatively owned.

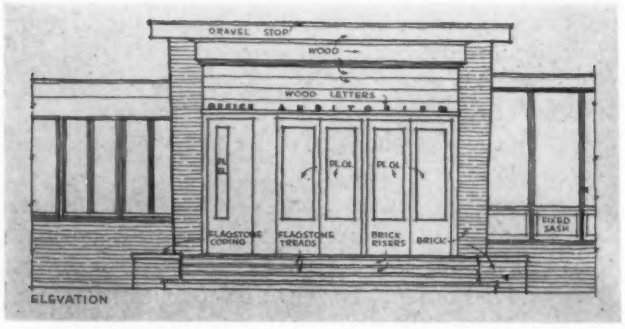


BEN SCHNALL Photos



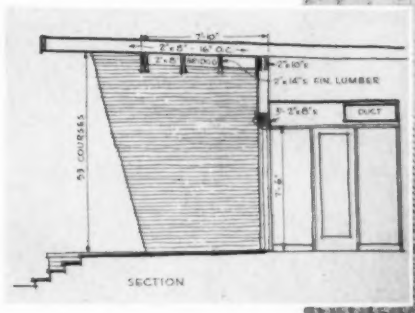


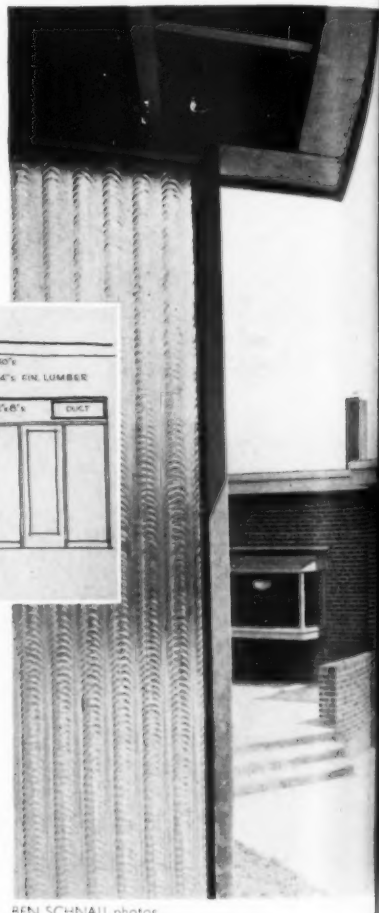
THE PHOTOGRAPHS: Left-hand page, top view, the covered passage along the shopping center of Winfield Park Community development; The middle view left to right: bus shelter, commercial building, community center building. (The child care center is out of sight, right rear). Bottom view, left-hand page, the main entrance to the community building. On this page, above, view of auditorium, the plot plan. The plan at the bottom of the two pages shows the community building with its "maintenance" adjunct of repair space, storage, and garage



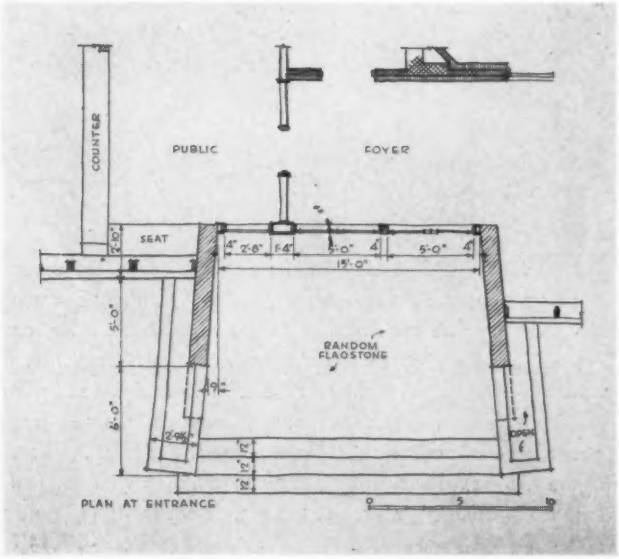
In the left-hand column of this page is seen the entrance detail that gives character to the main community building of Winfield Park. The view spread across the two pages shows the clean-cut little shopping center, as approached from the bus shelter. This bus shelter is seen on the opposite page, top left. It displays special excellence of design, with its translucent ribbed-glass back (introduced to prevent "monkey-shines"), and its bench support carried decoratively through the brick wall at the left. At top right, opposite page, is the food market show window







BEN SCHNALL photos

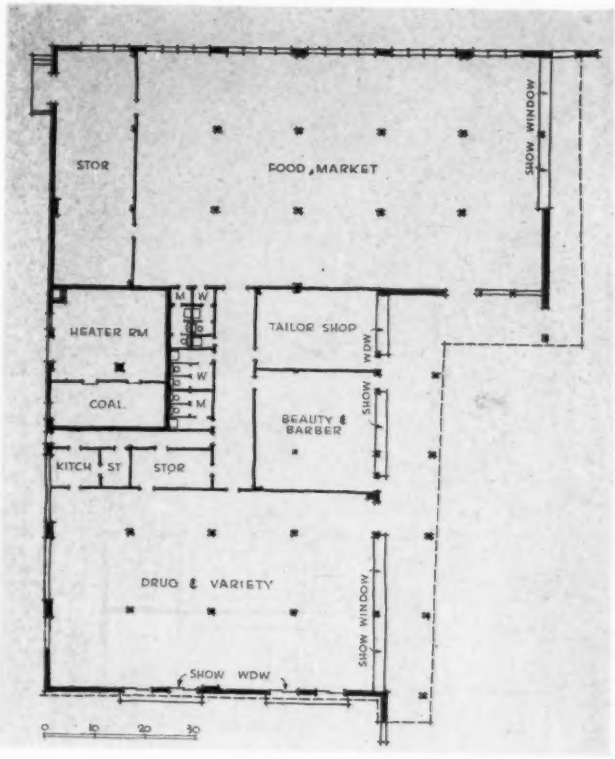


The two interior views on the opposite page show the gymnasium, and the adjacent passageway with its pleasant view to the houses. On the side of the gym away from the passage, the architect had originally planned to introduce regular windows and doors, which would have opened to a play court, extending the usableness of the gym, and giving it warmer character as a meeting room. The details of the drop doors which would have protected these windows during play will be presented in a subsequent issue of the RECORD. *The idea was a war casualty*

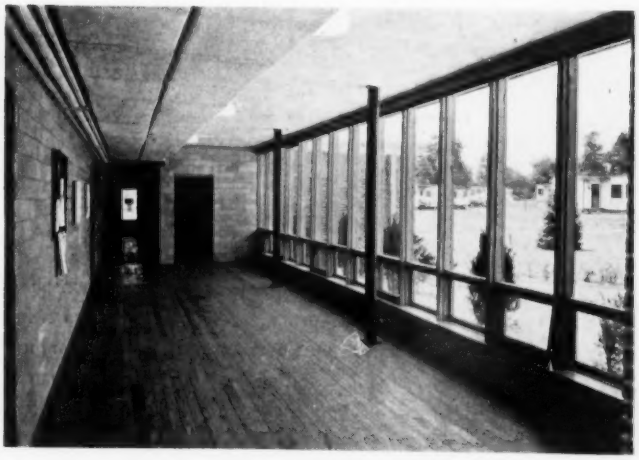







STOR
FOOD, MARKET
SHOW WINDOW
HEATER RM
M
W
TAILOR SHOP
WDW
COAL
BEAUTY & BARBER
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RODNEY McCAY MORGAN photos







A MODEL

MacLean Gardens, Washington, D. C.

Holden, McLaughlin and Associates, Architects

"Diagrammatic clarity in carrying out recommended nursery school practice." Above are seen the plan, office entrance side, and a nursery room interior. In the small views across-page may be seen the balcony across the two nursery rooms (which replaces and corrects the "ramps" seen in the plan); the simple but adequate kitchen, the lockers (cut away so children may use the ledge as seat) and the partitionless, easily supervised toilets scaled to child's size







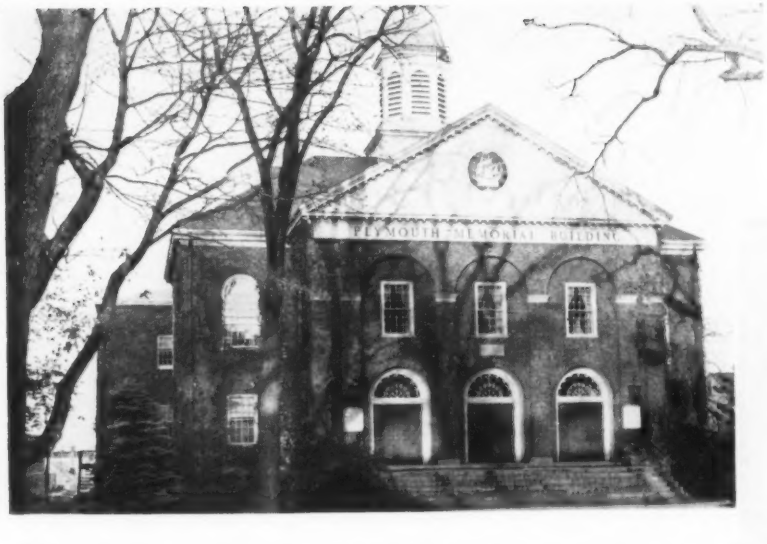


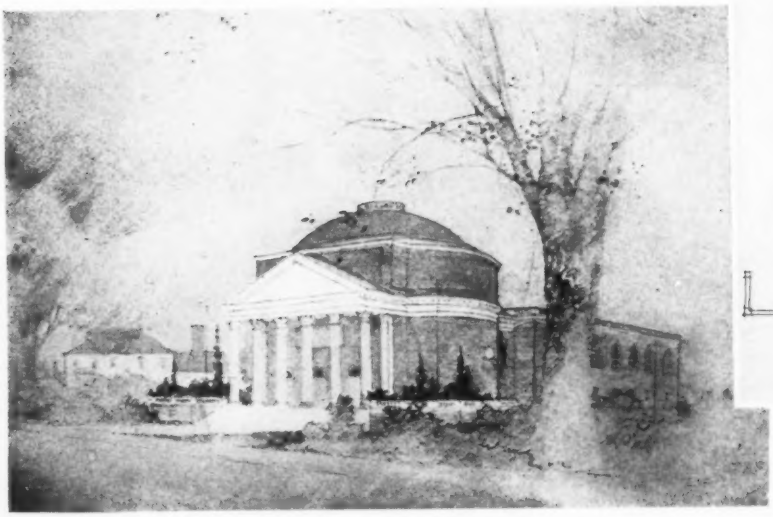


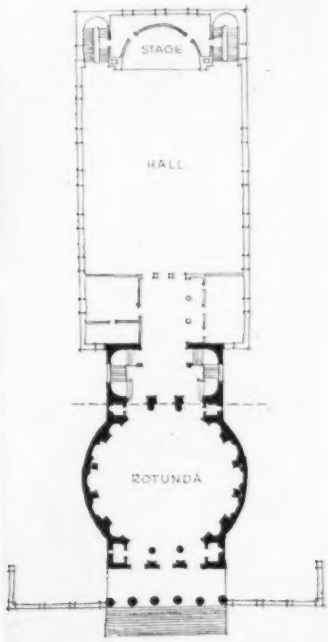
CENTER FOR CHILD CARE

IN ITS general arrangement, this little building carries out with diagrammatic clarity the recommended practice of the Nursery School Association, first presented in a Building Types Study (AR, Mar. '38, pp. 83–100) and based on the work of Jessie Stanton and others. Division into two rooms takes care of the two pre-school age groups. Provision of locker rooms, cot storage, and toilets immediately contiguous to the nursery rooms (so children need not leave the room) is correct and well handled. In the "observation rooms" parents may watch children's behavior and teachers' methods without being seen themselves through the intervening screen. Details are also exemplary: open lockers with shelves (not drawers), no partitions between toilets, simple hooks (not hangers) for clothes, towels, wash cloths. Administrative wing is well studied; note "volunteers' room" and its good placement in relation to isolation room and office.

VARYING CONCEPTIONS OF CIVIC CHARACTER







Memorial building at Plymouth, Mass., as conceived in competition drawings of Little & Russell, architects, and as later executed. The memorial rotunda was too ambitious, had to be dropped

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Community recreation center at La Jolla, Cal., built before World War I from plans by Irving J. and Louis J. Gill, retains dignity in its transition toward functional character, with only the arcade as gesture



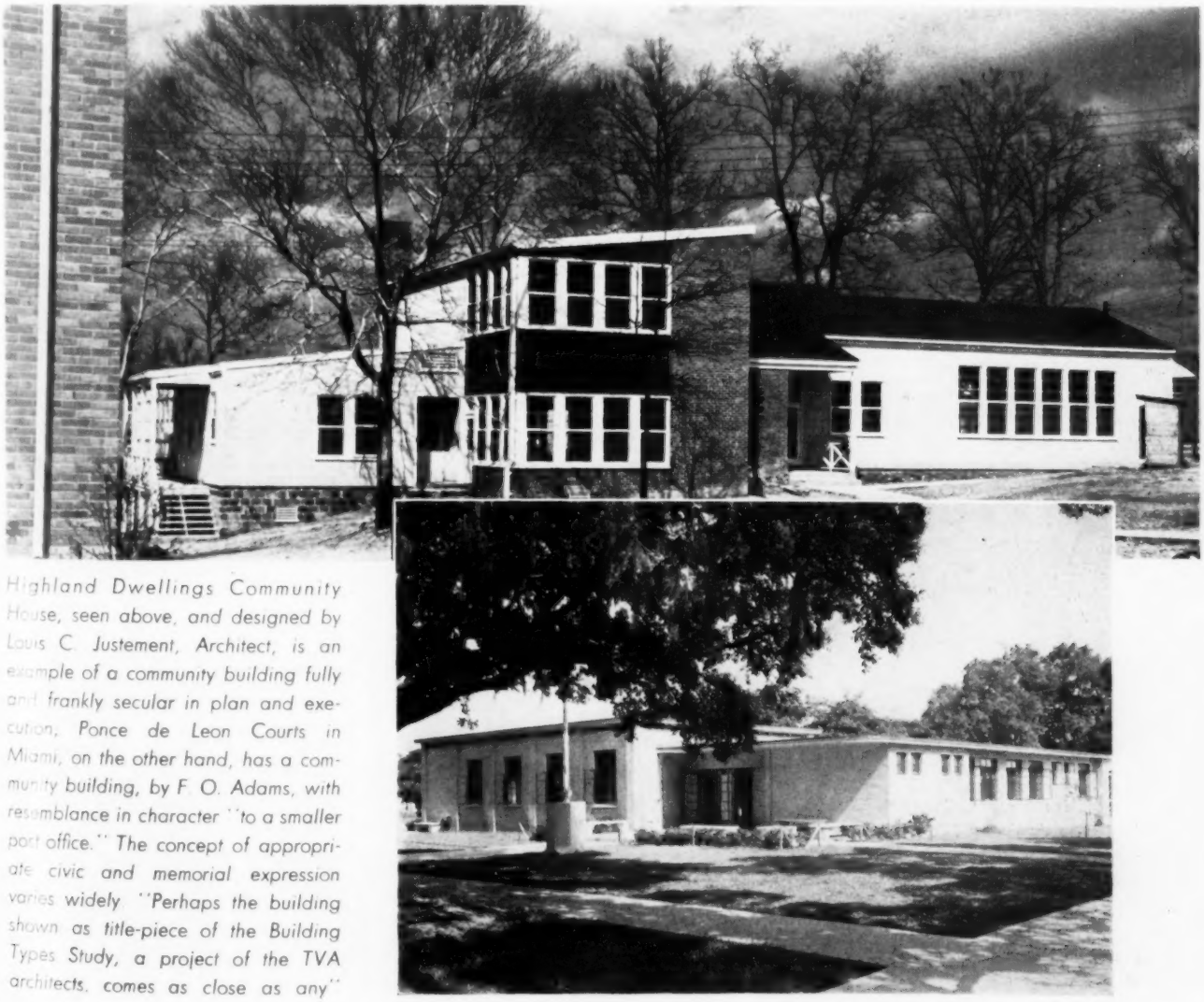
PLANNING A COMMUNITY BUILDING

Adding civic character and commemoration

To THE simple community type may be added quarters for veterans organizations, municipal administrative and service departments, and the motive of heroic commemoration through "living" memorials — usable instruments rather than awesome sarcophagi.

In Plymouth, Mass., whose memorial building is reproduced at the head of the opposite page, we may see the result of conceiving such memorial purposes too ambitiously. The dome of the University of Virginia, copied by the architects Little and Russell for use as a lobby or foyer, was fashionable enough at the time, and imposing enough to win the competition, but was never executed. On the other hand, the Community House at La Jolla, Cal., designed by the genius of Irving Gill even before World War I, retained as monumental gesture only a dignified and simplified arcade; with a functional rear elevation and some charming Mission interiors, it could serve as an example of transition to contemporary building. At Ponce de Leon Courts, Florida, is a building still more simplified in character though retaining the civic appearance, somewhat like a smaller post office; while the combined community building and civic center for Athens, Tenn., by the TVA architects, shown as title-piece of this study, is a project with that balance of ease and seriousness which comes nearest among our examples to display the authority of democratic institutions along with their easy friendliness. In contrast with all of these stands the housing-center example, frankly secular and homespun, making no effort whatever to be imposing. This character, too, goes back as far in American tradition as one may wish.

Incorporating provisions in the community building for veterans' organizations, with their currently expanding memberships and memorial appropriations, not only enlarges the community facility but is often the only practical way in which these organizations can supply their needs. Elaborate drawings for independent halls for such societies are rarely executed.



Highland Dwellings Community House, seen above, and designed by Louis C. Justement, Architect, is an example of a community building fully and frankly secular in plan and execution. Ponce de Leon Courts in Miami, on the other hand, has a community building, by F. O. Adams, with resemblance in character "to a smaller post office." The concept of appropriate civic and memorial expression varies widely. "Perhaps the building shown as title-piece of the Building Types Study, a project of the TVA architects, comes as close as any"

BRIEF GEOGRAPHICAL DIRECTORY OF RECENT COMMUNITY BUILDINGS (Alphabetically arranged under four regional classifications only.)

(Abbreviations: AR—Architectural Record; AF—Architectural Forum; PP—Pencil Points or Progressive Architecture)

NORTHEAST

Berea, Ohio: Combined Neighborhood and Child Center; J. Byers Hays, Wilbur Watson and Associates, Architects. AR June '45, p 87.

Bellmawr, N. J.: Housing Project; Mayer & Whittlesey and Joseph N. Hettel, Associated Architects. AF Jan. '43, p 78.

Brooklyn, N. Y.: Red Hook Houses; Red Hook Project Associated Architects; A. E. Poor, Chief Architect. AR May '42, p 54.

Center Line, Mich.: Defense Housing Project; Eliel and Eero Saarinen, Arch's; R. F. Swanson, Assoc. Arch. AF May '42, p 284; PP Nov. '42, p 56.

Cincinnati, Ohio: Greenhills; R. A. Wank, G. F. Cordner, Architects. AR Sept. '41, p 79.

Coatesville, Pa.: Carver Court; Howe, Stonorov and Kahn, Architects. PP June '44, p 59.

Great Lakes, Ill.: Naval Training Station Welfare Building; Skidmore, Owings & Merrill, Arch's. AF Mar. '43, p 55.

Hamden, Conn.: American Legion Memorial Building; Westcott and Mapes, Inc., Architects and Engineers. AR July '44, p 99.

Harrisburg, Pa.: Pine Ford Acres; George Howe, Louis & Kahn, Architects. AF Jan. '46, p 110.

Hill, N. H.: Town Hall; Wells, Hudson & Granger, Architects. AR Nov. '41, p 53.

New Haven, Conn.: Quinnipiac Terrace; Douglas Orr, R. W. Foote, Arch's; Albert Mayer, Cons. AF May '42, p 303.

New London, Conn.: Ocean Beach Park; Payne & Keefe, Architects-Engineers. PP Nov. '45, p 54.

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ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

IN ITS Building Types Studies the RECORD has always concentrated heavily on that area where architects and engineers work together. Here the RECORD extends its service in that same area. To a certain extent this section represents merely timely reconversion. Long-time readers will remember many treatises on technical topics and on materials and equipment advances, which for years appeared under the heading, "Technical News and Research." Our new title "Architectural Engineering" seems better suited to the more comprehensive material now proposed. Behind this service are wartime developments that have wrought two significant changes in the practical work of an architect's office. The war brought the architect into closer working relationship with engineers. That coupling will no doubt continue. And wartime technology hurried the normal advances of science. More important even than war's spectacular sciences is the normal interest of architects in technical matters of building, heightened now by the hurry of the times. The RECORD's new department is designed to save the time of the reader in the assimilation of technical information so necessary to true advancement of building.

Isolation of Sound in Buildings
By R. J. Tinkham

Time-Saver Standards: Acoustics of Walls and Floors

Industrializing Shelter: The Fuller House

Products for Better Building

Manufacturers' Literature



ISOLATION OF SOUND IN BUILDINGS

By R. R. J. Tinkham *

THIS study is concerned with the reduction of sound transmission from room to room, or from outside to inside of a building. It is not concerned with the acoustical correction of rooms for proper hearing conditions, nor with the reduction of noise within a room.[1]

One of the most puzzling problems confronting the building industry is the insulation of sound between rooms to insure privacy. Hotels, hospitals, apartment houses, office buildings, broadcasting stations and residences are all subject to the annoyance of unwanted sound coming from adjacent rooms or outside. The problem has been aggravated over the course of the past few years by the increase of traffic noises outside and more mechanical equipment inside, and by the tendency in modern construction, in the interests of economy, to make the walls and floors of a structure lighter and thus less sound insulating. As a result of this lighter construction and the increased noise levels, property values have had a tendency to decrease.

It is the purpose of this article to present the underlying principles of sound insulation with examples, so that the architect and the builder may make the most effective and economic use of his materials.

Definition of Terms

Decibel (db.) is a unit of sound level measurement. It bears a similar relation to sound as a degree (°) does to temperature. More precisely it is the logarithm of the ratio of one amount of sound power to another.

Noise level is commonly used to denote how far above the standard reference level a given sound lies. (See Fig. 1). It is expressed in decibels.

Transmission Loss (T.L.) is the sound insulation efficiency of a wall or floor expressed in decibels. (See Fig. 2).

Masking noise. The human ear is so constituted that it cannot perceive a faint sound when a much louder sound is present at the same time. One cannot hear a whisper in a boiler factory. (See Fig. 2c).

[1] See bibliography, p. 16.

* Physicist, Armour Research Foundation; and Consultant on Acoustics, Chicago, Illinois.

Frequency, measured in cycles per second (c.p.s.), is that property of sound which the human ear perceives as the pitch of sound. Low pitched sounds, such as the rumble of heavy trucks on a wood floor, may be around 30 to 100 c.p.s. High pitched sounds, such as police whistles or streetcar brake squeaks, lie in the range of from 3,000 to 15,000 c.p.s., the upper limit of audibility.

Planning of Buildings

The first step in attacking the problem of sound insulation is in suitably locating the building, and arranging the rooms within it to the best advantage. One should have advance knowledge of the noise levels which will be tolerated in the various rooms. It is obvious that the rooms which must be the quiet ones should be located, say, at the rear of the structure away from street noises, and that service areas, which are in themselves noisy, should be located on the street side of the building.

On the inside, kitchens, rumpus rooms, stenographic pools should be separated from areas where quiet is desired by intervening rooms in which intermediate noise levels may be tolerated. Clothes closets and the like are well placed at the common boundary between adjacent sleeping areas in hotels, apartment houses, and residences. It is impossible in the space allotted to cover all phases of planning for sound insulation. Other points will suggest themselves.[2]

Initial thoughtfulness in planning goes far in relieving the necessity of resorting to high cost construction for the prevention of sound transmission.

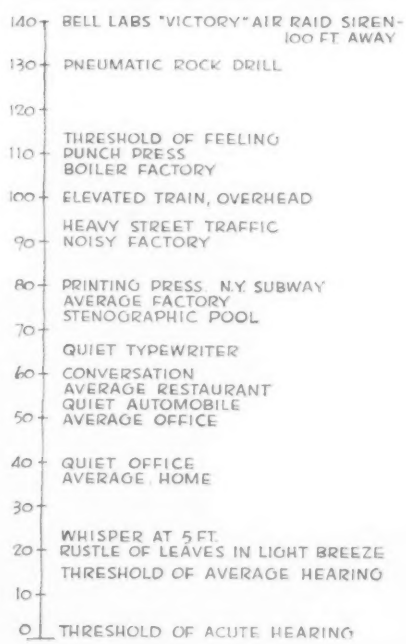


Fig. 1. Relative loudness of sounds

Factors affecting sound transmission

Sound may enter a room by any one or all of the following means:

1. By transmission of air-borne sound through openings.
2. By transmission of vibration through the structure or frame from one part of a building to another, setting room boundary walls, floor, or ceiling into vibration.
3. By transmission of sound through walls or floors set into motion like a diaphragm by the sound waves striking them.

The effectiveness of even the best of sound insulating partitions can be nullified by the smallest cracks around a door, a keyhole, or window, an interconnecting ventilation duct, or any other air passage common between the two sides of the partition. The elimination of even the smallest crack cannot be too strongly emphasized. The solution to most of these difficulties is obvious. Windows and doors should be eliminated wherever possible when high insulation is desired. The proper lining of both supply and exhaust ducts with sound absorptive material, and running of them for a sufficient length between rooms will eliminate this source of trouble.[3]

The prevention of structure-borne sounds is largely a matter of properly isolating the sources of the disturbance from the structure by using properly designed vibration isolators, or in using non-homogeneous construction wherever possible, or in extreme cases by completely separating various structural parts of a building, making virtually two separate buildings.

ACOUSTIC RATINGS OF WALL TYPES

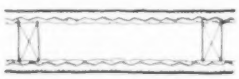
By R. J. Tinkham

See also pages 117, 125 and 127.

Panel	T.L. (transmission loss) in db. at Various Frequencies						Weight
	128	256	512	1024	2048	4096	#/ft.²
W-1	14	28	29	38	43	40	4.5
W-2	31	35	38	43	45	61	20.0
W-3	—	29	24	36	48	—	5.1
W-4	—	40	47	57	56	—	13.3
W-5	—	30	28	42	59	—	4.94
W-6	—	52	49	60	60	—	13.1
W-7	31	41	46	51	54	—	14.
W-8	51	48	50	56	48	—	14.
W-9	30	33	31	38	48	53	19.4
W-10	36	30	34	39	47	54	16.4
W-11	34	33	35	43	51	57	22.4
W-12	30	28	35	40	43	—	19.6
W-13	50	48	53	55	60	72	17.2
W-14	43	43	51	50	62	74	17.2
W-15	29	36	36	42	47	47	21.0
W-16	45	44	55	59	62	80	22.



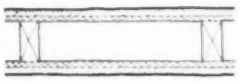
W-1 — WOOD STUDS - 16" O.C. 3/8" 3-PLY PLYWOOD NAILED BOTH SIDES



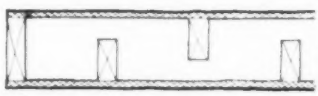
W-2 — WOOD STUDS - 16" O.C., METAL LATH, GYPSUM SCRATCH & BROWN, WHITE FINISH BOTH SIDES



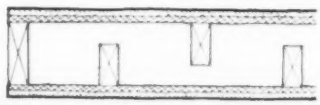
W-3 — WOOD STUDS - 16" O.C. 1/2" FIBERBOARD, JOINTS FILLED, BOTH SIDES



W-4 — SAME AS W-3, WITH 1/2" SCRATCH, BROWN & WHITE, GYPSUM BOTH SIDES



W-5 — 2" x 4" WOOD STUDS, STAGGERED, 8" O.C. 2" x 6" STUD AT EDGES 1/2" FIBERBOARD NAILED BOTH SIDES



W-6 — SAME AS W-5, WITH 1/2" SCRATCH, BROWN, & WHITE GYPSUM, BOTH SIDES



W-7 — WOOD STUDS - 16" O.C., GYPSUM LATH, ATTACHED WITH STIFF CLIPS 3/8" SCRATCH, BROWN, WHITE GYPSUM PLASTER BOTH SIDES



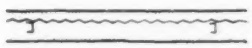
W-8 — SAME AS W-7, EXCEPT ATTACHED WITH SPRING CLIPS 1/2" PLASTER BOTH SIDES



W-9 — 2" SOLID GYPSUM PLASTER ON PERFORATED GYP LATH, 3/4" CHANNEL STUDS, SMOOTH WHITE BOTH SIDES



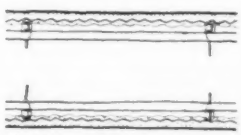
W-10 — 2" SOLID GYPSUM PLASTER SAME AS W-9 EXCEPT EXPANDED METAL LATH



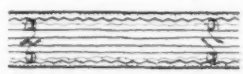
W-11 — 2 1/2" SOLID GYPSUM PLASTER SAME AS W-10



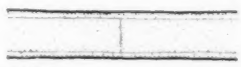
W-12 — 3" METAL STUDS - 16" O.C., METAL LATH, 1/2" SCRATCH, BROWN, WHITE GYPSUM PLASTER BOTH SIDES



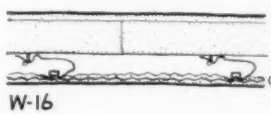
W-13 — TWO PANELS, NOT JOINED; 3/4" CHANNEL STUDS, EXPANDED METAL LATH, SCRATCH, BROWN & WHITE GYPSUM PLASTER BOTH SIDES FACE TO FACE = 10"



W-14 — SAME AS W-13, EXCEPT FACE TO FACE = 4 1/2"



W-15 — 3" x 12" x 30" GYPSUM TILE 1/2" BROWN, WHITE GYPSUM PLASTER BOTH SIDES



W-16 — 3" x 12" x 30" GYPSUM TILE, RESILIENT CLIP, METAL LATH, 3 COATS GYPSUM PLASTER, 2 COATS GYPSUM PLASTER ON TILE, OTHER SIDE (WHITE FIN. BOTH SIDES)

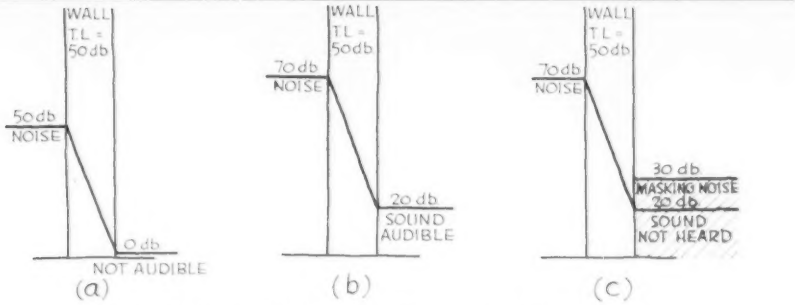


Fig. 2. Reduction of sound through an insulating partition

Homogeneous construction

In understanding the prevention of sound transmission through partition walls or floors, several factors must be considered. A simple thin door panel transmits sound from one side to the other somewhat in this manner: the sound striking one side of the panel sets it in motion as a vibrating diaphragm; this in turn sets the air in motion on the other side of the panel. This air motion is perceived as sound by the ear. The amount transmitted depends on the *amplitude* with which the panel vibrates, and this in turn depends upon four factors:

(a) the *initial energy* of the original sound,

(b) the *stiffness* of the panel,

(c) the *mass* of the panel,

(d) the *damping* of the panel,

either by internal friction in the panel material or by the way in which the panel is mounted at the edges.

Stiffness: A sheet of steel would be a better sound insulator than an equally heavy sheet of lead, because the steel sheet possesses greater stiffness.

Mass: The heavier a partition, the better sound insulator it will be. It should be noted, however, that the T.L. of a homogeneous partition (solid brick, or concrete, say,) does not increase in direct proportion to its weight per unit area, but rather in proportion to the logarithm of its weight per unit area. Loosely speaking, this means that the value of the transmission loss does not increase as rapidly as the value of the weight — the law of diminishing returns.

Damping: In small panels, such as doors or glass lights in their frames, the method of fastening them in place is important.* In large panels, such as walls or floor areas, the manner in which they are secured at the edges is of little importance with regard to their effectiveness as sound insulators. Considering internal damping only, a sheet of lead would be better than a sheet of steel. If a sheet of lead is struck with a hammer it gives a dull thump as contrasted with a sheet of steel which would ring if struck in a similar manner. A homogeneous partition, therefore, achieves its sound insulative value by being *stiff*, *heavy*, and possessing good internal *damping*.

* *Viewing windows in broadcast studios are of multiple panes each of different thickness (different masses, different stiffnesses) and mounted in rubber or felt at the edges (damping).*

Non-homogeneous construction

It has been found, as the result of laboratory investigations,[4,5] that the T.L. of a structure of given weight can be increased greatly by breaking it up into two or more layers of different thicknesses and densities, preferably not connected except at the edges. The sound must set one side in motion, but energy from this portion must be transferred through the various layers to the far side in order to be transmitted. Any discontinuity lessens this possibility, and by a proper selection of materials the T.L. may be made very great in comparison to its weight.

By experiment it has been found that in a simple stud wall, having lath and plaster on both sides, most of the energy is transmitted through the studs and not through the air between the studs. The stiffer the stud, and the weaker the plaster (internal damping) the better the T.L. Hard plaster does not have good internal damping (relatively).

If the coupling between the lath and the studs is reduced by resilient fastenings, the T.L. is increased (see Tables: Panels W-2 and W-8).

If separate studs are used to support each side of the wall, the T.L. is still further increased (Panel W-6).

Loose fillers of sawdust, rock wool, or the like, between the studs may actually increase the coupling between one side of the wall and the other, resulting in a *decrease* of the efficiency of the wall.

Sound absorptive liners within the air space tend to increase the effectiveness of the wall (Panel W-27). This is especially true as the separation of the two wall surfaces increases, the limiting case being an acoustically treated intervening room.

Staggered-stud construction shows some improvement over single stud construction, but not as much as might be expected because of the usual common connection at the ceiling and floor plates. If two separate plates were used, one set fastened rigidly to the subfloor, intersecting walls, and ceiling, and the other set held away from the remainder of the structure on fiberboard strip or other resilient pads, one can expect better performance. If a resilient mount is used, care should be taken that the nails holding the plates in place form rigid connections through the pads at a minimum number of points, preferable none.

In masonry construction, rather than plastering directly on the masonry core, it is highly desirable to keep the plaster surface from making contact with the wall core by some method of furring (Panels W-15 and W-16; W-19 and W-20). Many patented systems of resilient clips have been designed for this use, but in most cases simple furring strips will be almost as good. The more flexible the coupling of plaster to wall core, the better the T.L., all other things being equal.

In floor construction similar methods should be employed: by floating floors and suspended ceil-

(Continued on page 130)

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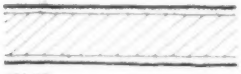
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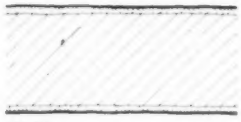
ACOUSTIC RATINGS OF WALL TYPES

Panel	T.L. (transmission loss) in db. at Various Frequencies						Weight
	128	256	512	1024	2048	4096	#/ft.²
W-17	—	46	—	49	58	—	48
W-18	—	48	48	56	56	—	92.0
W-19	—	40	37	49	59	—	31.6
W-20	—	52	47	57	54	—	36.5
W-21	—	41	36	43	51	—	28.0
W-22	—	42	41	44	50	—	28.0
W-23	—	41	40	42	50	—	29.0
W-24	—	41	37	45	52	—	37.0
W-25	—	44	45	49	58	—	48.0
W-26	—	49	40	37	52	—	65.0
W-27	—	55	51	51	66	—	50.0
W-28	8.0	5	9	14	19	17	15.5
W-29	31	27	35	36	40	47	20.4
W-30	32	34	36	39	42	52	25.3
W-31	30.2	35	41	49	49	43	—



W-17

4" BRICK PARTITION, ½" BROWN, WHITE FINISH GYPSUM PLASTER BOTH SIDES



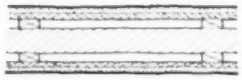
W-18

SAME AS W-17, EXCEPT 8" BRICK PANEL



W-19

SAME AS W-17, EXCEPT ONE LAYER OF BRICK LAID ON EDGE



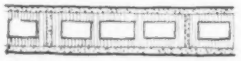
W-20

BRICK LAID ON EDGE, 1" x 2" FURRING, WIRED, & GYPSUM LATH PLUS ½" BROWN & WHITE GYPSUM PLASTER BOTH SIDES



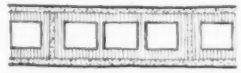
W-21

3" x 12" x 12" - 3 CELL CLAY TILE, ½" BROWN & WHITE GYPSUM PLASTER BOTH SIDES



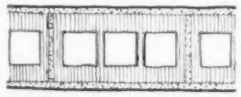
W-22

ANOTHER PANEL BUILT AS NEARLY LIKE W-21 AS POSSIBLE



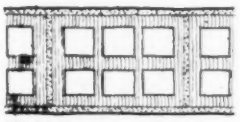
W-23

SAME AS W-21 EXCEPT 4" x 12" x 12" 3-CELL TILE



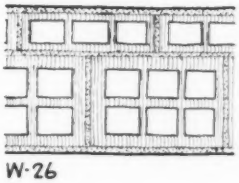
W-24

SAME AS W-21 EXCEPT 6" x 12" x 12" 3-CELL TILE



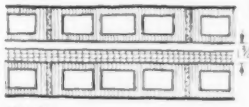
W-25

SAME AS W-21 EXCEPT 8" x 12" x 12" 3-CELL TILE



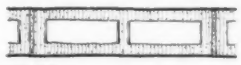
W-26

DOUBLE CLAY TILE 3¾" x 12" x 12" 8" x 12" x 12", ½" BROWN AND WHITE GYPSUM PLASTER BOTH SIDES



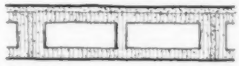
W-27

DOUBLE PARTITION WITH AIR SPACE TWO WALLS OF 3" x 12" x 12" 3-CELL CLAY TILE 1" FLAXLINUM BUTTED ¼" TIGHT BETWEEN TILE. NO PLASTER. 1" x 4" FLAXLINUM STRIP AT BOTTOM, SIDES & TOP OF ONE PARTITION



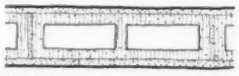
W-28

PUMICE & PORTLAND CEMENT 2-CELL TILE - 4" x 8" x 16" NO PLASTER (VERY POROUS)



W-29

SAME AS W-28, BUT ½" GYPSUM PLASTER ON ONE SIDE ONLY



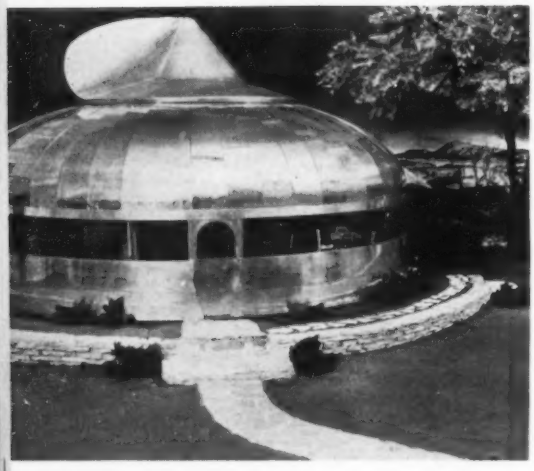
W-30

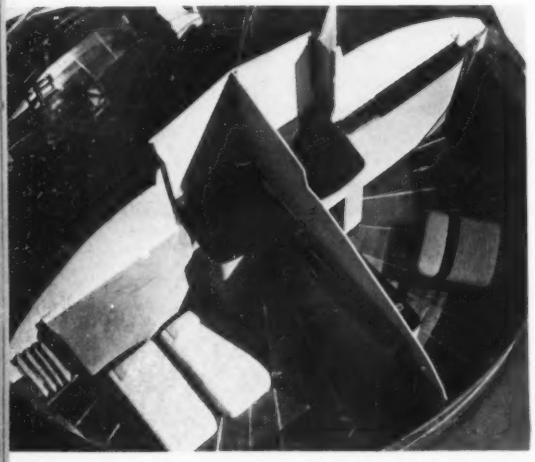
SAME AS W-28, BUT ½" GYPSUM PLASTER ON BOTH SIDES

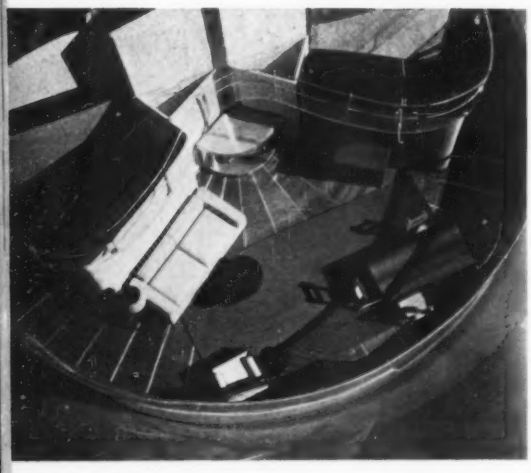


W-31

GLASS BRICK 3¾" x 4⅞" x 8"







The Fuller House model. Top, plexiglas windows do not support roof as walls (and floor) are hung from rings by cables running to central mast. Center. Looking down into the bedrooms, closets and interior baths. Bottom. Looking down into living room; balconies add space over kitchen and entrance hall; see plan

INDUSTRIALIZING SHELTER
THE FULLER HOUSE

THE MOST rational, stimulating, and significant development in the engineering of home building has just burst into the consciousness of the house-hungry public. Almost twenty years after the introduction of his Dymaxion House, 1927, Buckminster Fuller again startles the complacent — this time with not just a model to demonstrate his scientific approach and radical solution, but with a going concern, (Fuller Houses, Inc., of Wichita, Kansas) ready to manufacture, market and service the now fully developed mass-produced house. Beech Aircraft Corporation is under contract to turn out some 200 houses per day early next year. Details of the unique new corporation, its program and its personnel have been given wide publicity, thanks to Herman Wolf, its president, and Buckminster Fuller, chief engineer and chairman of the board. But the engineering philosophy, facts and features are most intriguing and enlightening to the profession.

The Fuller House, like its predecessor, is based on scientific, rational, imaginative concepts, with no concessions to traditional house construction methods. It has been thought through on the basis of the analysis of purposes, plus the determination of best available means to accomplish those purposes efficiently and economically.

Fuller's purposes only are traditional, viz.:

1. To provide shelter against the destructive forces of man's environment, wind and weather, fire and intruders.

2. To provide for cleanliness, sanitation, and healthful living.

3. To reduce the labor of housekeeping and house maintenance to a minimum.

4. To provide a home environment that is good for man's soul, that is spacious and beautiful, in which parents can have freedom to give their children the attention they need so that the children may grow up in a wholesome psychological environment.

5. To provide this kind of living space at such low cost that everyone can afford it.

Fuller's primary concept is that the shelter industry must be truly industrialized by making full use of advanced mass-production, distribution, and servicing methods.

"Performance per pound" governs the choice of materials and the principles of their use; therefore light, strong alloys *in tension* support walls, floor, and roof in an articulated system.

The materials used in the prototype Fuller House erected at Wichita include: aluminum, plexiglas, lucite, plastic screens, copper wire and tubing, plastic and rubberized fabric, synthetic rubber extrusions, fiber-glass, cable, chrome molybdenum steel, magnesium and nylon.

The outside walls and roof are made of aluminum with aluminum foil insulation. The ceiling and inside walls are also of aluminum. The present floor is made of impregnated plywood sections joined with aluminum strips and supported by aluminum beams.

(In place of the suspended floor, shipped from the factory, the Fuller House can be erected over an insulated concrete base, which is then covered with wood, linoleum or plastic. This type of floor construction will be optional for those who wish to take advantage of the saving it will permit in the cost of the house.)

Quantitatively, the house is 36 ft. in diameter, 22 ft. high, 1017 sq. ft. in area, and 12,000 cu. ft. in volume. Complete weight, including foundation, is 4 tons (or about 3% of the weight of a comparable traditional frame house with basement). The structure weighs approximately ½ lb. per cu. ft.

Presenting the whys and wherefores of the mass-produced house, engineered on the principles of maximum performance per pound, metals in tension, and welfare of the family

Why the hemisphere? Among Fuller's reasons for choosing the modified hemispherical form are:

1. *Greater floor area per length of enclosing wall.* The perimeter of the circular house is 113 ft., enclosing 1017 sq. ft. of floor area. A square of the same perimeter (28¼ ft. square) encloses only 798 sq. ft. of floor. The Fuller House encloses more than 27% more area for the same length of enclosing wall.

2. *Greater cubic volume per roof and wall surface.* By approaching the maximum economy of a sphere, spaciousness is achieved with an actual saving in surface material.

3. *Exterior aerodynamic advantage.* In wind resistance a hemisphere has a 10 to 1 advantage over a cube of similar volume, therefore lighter members can be used. Heat loss is reduced since it is directly proportional to wind drag.

4. *Interior aerodynamic advantage.* The curved walls and domed roof form gives an unrestricted passage for the circulation of air. Also, sound is dissipated in an improved acoustic pattern.

5. *Centralization of services.* Electricity, heat, light, water and air services are centrally placed in a controlled system offering the shortest radial distance to each of the rooms — thus providing the most economic use of energy sources.

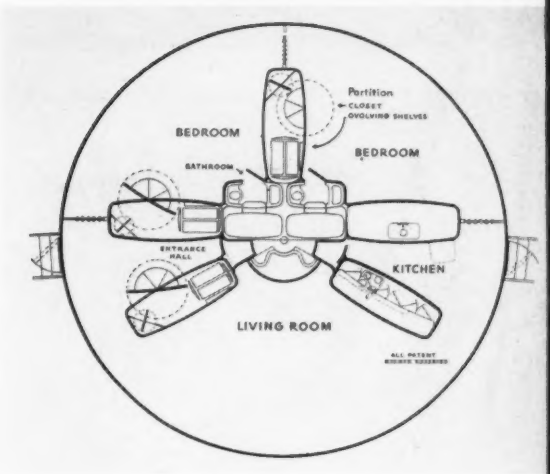
6. *Efficient employment of sheet metal.* Sheet metal can be used structurally without reinforcement or corrugation if curved in an arc.

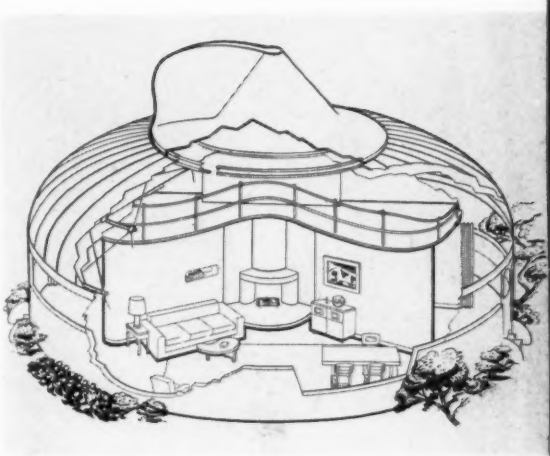
7. *A Central mast* support means lightweight stability. The entire house is hung on a single steel column constructed of 7 hollow steel tubes, 18 ft. high, total diameter 10 in. It will easily support a weight of 125,000 lb. The house itself weighs 8,000 lb.; add 100 people and a full snow load on the roof and the maximum weight the house is required to support is 25,000 lb. Thus there is a safety factor of 5 to 1.

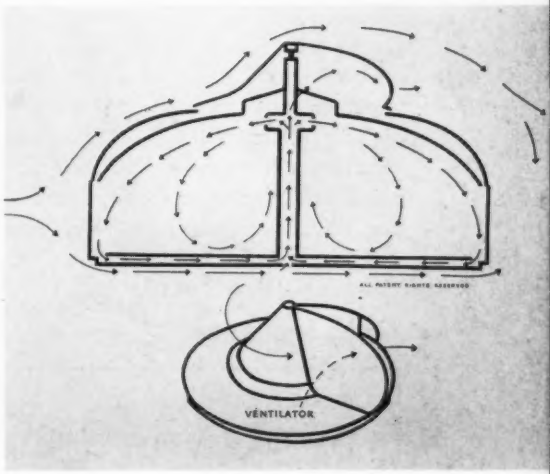
8. *Simplicity of articulation*, using tension as a structural principle. Fuller explains, "Structural systems represent an equilibrium of tension and compression components which are rendered cohesive by the external forces acting upon them. Chief among the latter are gravity, wind and aerodynamic variables. In the past the materials available to man have favored a compressive emphasis in opposing these basic forces. Even after the introduction of steel, construction persisted along the traditional lines used in stone and wooden buildings. The result is an unnecessary continuation of excessive weight and rectangular design. In addition the contemporary development of high alloyed steel has increased the possible applications of tension principles.

"Compression members themselves are inherently limited; they tend to fail because all working loads must be applied at the terminals, resulting in a concentration of stress at one point. The ratio of length to diameter of a column cannot be improved; thus when work loads are increased, the diameter (and consequently the weight of material) must be increased correspondingly. On the other hand, tensile strength can be increased by alloying. Additional loads can be applied at any point on a tension member with a tendency to contract diameter and actually augment the cohesive strength. The structure is hung from a few secondary web spreaders at the top of the mast. The roof, wall and floor are hung as appendages and tend to cluster naturally: since each component seeks the same vertical axis gravity acts to favor cohesion. The house actually *articulates* in a mechanical system such that when pressure is applied at any one point the resulting strain is distributed throughout the entire structure."

The Structural System. "From the top of the mast are hung three







Top, plan showing room divisions, revolving closets, "ovolving" shelves, and interior bath units. Center, cut away section showing supporting rings and cables and living room interior. Bottom, arrows show wind flow outside and "fountain" flow of warmed, conditioned air throughout the interior of the house





Photographs taken in the Fuller House erected at Wichita show why housewives are enchanted. Note domed ceiling, continuous drapery valance, plastic-covered accordion doors. Below, sections show switch-operated "ovolving" shelves, compact bath units, and wall with plastic curtain raised to expose plastic-screened ventilating strip below windows

circular compression rings connected by tension cables. The rings, of steel tubing, function somewhat like horizontal arches providing rigidity and serving as a framework for the tensed metal skin of the roof. The smallest ring is near the top of the roof — just under the track for the ventilator — the middle ring is halfway down the dome, and the largest or circumferential ring is at the lower edge of the roof where the exterior wall is joined. These are joined by a network of tension cables triangulated downward from the mast and criss-crossed like the spokes of a wire wheel. The cables, after weaving through the successive rings, are brought down to support the floor and are finally connected to 12 steel anchor rods around the house. The walls have no weight-supporting function."

The lower half of the exterior wall is sheet aluminum alloy; the upper half is clear plexiglas window. Below the window area sections of the aluminum may be lowered to reveal a plastic screen built into the wall of the house. A total of 240 sq. ft. of screen surface is provided and 320 sq. ft. of plexiglas window.

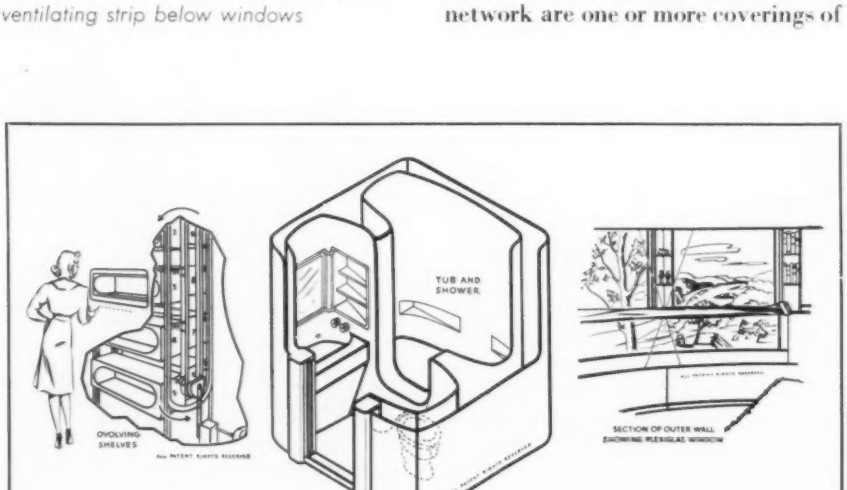
The roof is composed of 48 metal sectors, or cowling gores stretched on aluminum ribs. The ribs or carlings (inverted hat shape in cross-section) rest directly on the circular compression rings. The rib is wide enough to support the joint of two roof sheets, serves as a gutter between them, and as a natural expansion joint. Between the outside skin and the cable network are one or more coverings of insulating aluminum foil. Though the roof is a dome it can be packed flat for shipping; the carlings can be nested and the cowlings lie flat when not under tension. Formed structural members are made as Z-frames rather than channels so that nesting is possible without any sacrifice in strength. All holes are gang-punched in manufacture and the numbers of types of fastenings is reduced to a minimum. All holes in parts are colored to identify the proper fastening for the holes. Fastenings are of two kinds: bolts, and "blind" rivets as used in aircraft construction. Cost saving in time is derived by the universal use of ¼ in. bolts of varying lengths.

Mechanical Systems. *Heating, air conditioning and ventilating* units (filtering, cooling, and dehumidifying) designed to operate on gas, oil, or electricity and located in the central facilities column, will be furnished. The hemispherical form and the use of aluminum roof and walls provides extraordinary thermal efficiency. The outer shell reflects about 90 per cent of the solar radiation. Most of the balance is absorbed by the insulation between roof and ceiling and between outer and inner walls. In the winter the aluminum ceiling reflects heat back into the rooms.

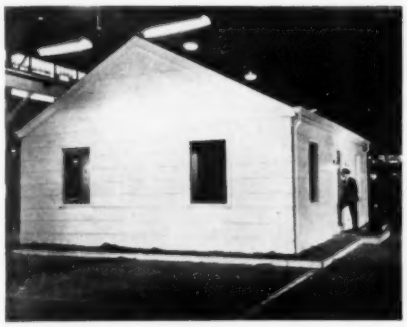
Even more important to cold weather comfort are the aerodynamic advantages with respect to heat losses due to wind drag. Any object which offers wind resistance creates a cone-shaped low pressure area in its wake. Research has shown that in the case of a conventional square or rectangular house the low pressure cone is very large and has the effect of drawing warm or high pressured air from the house to fill the low pressure area. The warm air escapes through inadequately sealed windows and through other unsealed holes or cracks in the house. Insulated walls cannot prevent such losses. Windows in the Fuller House are sealed and doors are airtight.

Wind studies and wind tunnel tests led to the design of a large ventilator (18 ft. diam.) which rotates on the top of the house (heading always into the wind) to focus the low pressure area at a point about 45 degrees leeward and upward from the center of the house. The ventilator draws air from the house — changing the air inside

(*Continued on page 134*)



PRODUCTS for Better Building



Speedily built aluminum-cement house

ALUMINUM HOUSE

A method of constructing an aluminum-cement house in a few days' time is being perfected by Reynolds Metals. The house is made of mass-produced aluminum units and a cement material poured at the building site. Roof and siding, as well as window and door frames, are to be of aluminum. In addition to providing the qualities of permanence and insulating value, it is claimed that these units will permit great flexibility of arrangement to suit individual design. When details are perfected, architects will be furnished information on the general plan of construction. Reynolds Metals Co., 2500 South Third St., Louisville 1, Ky.

PACKAGED HARDWARE

To simplify the problem of hardware selection, the *Door-In-One* packaged hardware comprises an ensemble of related items to meet complete door requirements for every room in the home. There is a choice of 14 designs, to suit any period style. Included in the package will be lock, knobs and handle, knocker, a push button, a letter box drop plate, and hinges. P. & F. Corbin, New Britain, Conn.

WEATHERSEAL BALANCE

A spiral spring encased in an aluminum housing provides an easily operated sash balance and at the same time the metal casing serves as weatherstrip. Since the *Dura-seal* installation includes a complete metal runway, the window jambs are stated not to require painting, and hence to eliminate the possibility of windows sticking and binding. Zegers, Inc., 5619 Harper Ave., Chicago 37, Ill.

MILDEW KILLER

A new fungicide is asserted to be safe for household use, to destroy mildew and prevent its return for months. Used as a preventive, this fungicide is said to keep mildew from forming in even the most humid conditions. The product is a highly concentrated colorless liquid, which the manufacturer states may, when properly diluted, be used with safety on fabrics or any surface excepting those rubberized or waterproofed, that would not be injured by soap and water. Interchemical Corp., Trade Sales Division, Fair Lawn, N. J.

FINISHES

Chrome Paint

A patented stabilizer contained in a new chrome paint, *Chromatone*, prevents darkening in the can even after opening. The manufacturer states that this ready-mixed paint also possesses less tendency to tarnish after application, and that it is the nearest approach to natural silver chrome finish yet produced. This product is recommended for indoor or outdoor application on a wide variety of materials. The new formula has been developed to give high protective, drying and lasting qualities. Alumatone Corp., 1523 Grande Vista, Los Angeles 23, Calif.

Clear Varnish

Superior resistance to wear and abrasion, plus imperviousness to acids, alkali and alcohol are claimed for *Devoe Marble* floor varnish. Clear and pale in color, this product dries in four hours, and is dust free in one hour. Devoe & Raynolds Co., Inc., 44th St. & First Ave., New York 17, N. Y.

Custom-Color Paint

Accurate reproduction of over a thousand colors is claimed for the *Nu-Hue* color system. Using six basic hues in combination with black and white, measured proportions are mixed in accordance with formulas given for each sample shown on a series of matching charts. "Prescription-Mixing" permits the preparation of any desired amount of paint in the color selected ready for use within 15 minutes, and without the necessity of attempting to match wet color samples. Advances in the characteristics of the paint are also said to have been achieved, in that the material may be used for either interior or exterior work, is non-dulling and non-fading, and the graying agent used results in exceptional clarity of tone. The Martin Senour Co., Chicago 1, Ill.



Prescription mixing for matched paints

HEAT CONTROL

For use with any type of automatic heating system, the *Weather-Man* provides a completely automatic thermostatic control actuated by outside temperatures. The time of starting in the morning and shutting down at night varies as the weather becomes warmer or colder. During the day, constant building temperatures are maintained, it is claimed, by producing heat at regularly spaced intervals with the length of the heating periods changing as the weather changes. When outdoor temperatures drop to an extreme level, continuous heating is provided, night or day. Automatic Devices Co., Weather Controls Division, 53 West Jackson Blvd., Chicago 4, Ill.



A weather-controlled heat regulator

PLASTIC-ARMORED STEEL

The toughness of plastic resin electrostatically applied and baked in with infrared heat protects the surfaces of *Plasticlad*, an alloy-steel sheet. Immunity to atmospheric corrosion or chemical attack and high fire resistance are among the stated properties of this material. Various colors are permanently incorporated in the plastic coatings. Ventilators, flashings and fastenings as well as roofing and siding are made of these sheets. The manufacturer is also producing a prefabricated *Plasticlad* garage that is shipped in knock-down sections to be assembled in a few hours. Reliance Steel Products Co., McKeesport, Pa.

(*Continued on page 136*)

MANUFACTURERS' LITERATURE

ACID PROOF PLASTIC

Nukemite. Booklet describes method of application of plastic resin surface coating for acid-proofing wide range of materials, concrete, steel, wood, etc. 12 pp., illus.

Acid-Proof Materials, Maintenance, Construction. Composition, properties and methods of application of a group of resinous plastic base products are discussed. Acid and alkali resistant paints, enamels, cements and brick provide a full range of materials for use on walls, floors, tanks and equipment. 12 pp., illus. Nukem Products Corp., Buffalo 20, N. Y.

AIRPORT EQUIPMENT

Airport Electrical Equipment. Typical lighting plans and wiring diagrams for all classes of airports are presented, together with descriptions of the various types of equipment. Three sections cover distribution equipment, lighting equipment and alternate distribution apparatus, as well as special equipment for small airports. 56 pp., illus. Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.*

CONVEYORS

Faster, Lower Cost Handling. Folder describes various types of gravity and belt conveyors, vertical lifts, and pneumatic tubes. Also described is the Trayveyor, a special vertical lift for dining room service. 4 pp., illus. Lamson Corp., Syracuse 1, N. Y.*

Otis Electric Dumbwaiters. Data sheet describes construction, installation and operation of electric dumbwaiters. Plans and sections of hoistways and details of hoistway door arrangements are given. 2 pp., Illus. Otis Elevator Co., 260 Eleventh Ave., New York 1, N. Y.*

COOLING BLOWERS

Overhead Blower Units for Low Temperature Cooling. Engineering information is tabulated for easy use in selecting blower units for cooling systems. Data includes selection of refrigerant and type of coils; relation of blowers to size of refrigerator and specific room temperature; and recommended air velocities. 12 pp., illus. Rempe Co., 340 North Sacramento Blvd., Chicago 12, Ill.

FINISHES

Modern Coatings Based on Bakelite Resins. Booklet discusses properties and test results of resin-base paints. 20 pp., illus. Bakelite Corp., 30 East 42nd St., New York 17, N. Y.

FOLDING EQUIPMENT

In-Wall Folding Tables and Benches. Folding steel tables and benches that disappear into wall pockets are described. Recommended for use in schools, community buildings, etc., typical installations in multi-purpose rooms are shown. 8 pp., illus. Schieber Mfg. Co., 12720 Burt Rd., Detroit 23, Mich.

HARDWARE

Lockwood Finishing Hardware. Complete line of hardware in a wide range of designs is classified in related groups for various locations in five types of buildings: apartments, residences, hospitals, institutions and schools. Information covers construction, finishes and dimensions. Additional miscellaneous accessories, door pulls, push bars and door operators are included. 20 pp., illus. Lockwood Hardware Mfg. Co., Fitchburg, Mass.*

HEATING

Chase Copper Tube for Radiant Heating. Brochure discusses theories and principles of radiant heating. Technical requirements, design procedure and controls are considered. Recommendations are made for typical installations in various locations. Photographs show many systems during construction. 75 pp., illus. Chase Brass & Copper Co., Waterbury 91, Conn.*

Radiafin Tubes. Heat radiation by means of pipes having spirally-wound fins is presented in this folder. Equivalent direct radiation and correction tables are furnished for use in specifying these tubes. 4 pp., illus. Schutte & Koerting Co., 12th & Thompson Sts., Philadelphia 22, Pa.

Controls and Hook-Ups for Hot Water and Radiant Heating Systems. Manual discusses the design and operation of control system for heating plants. Various types of controls and valves are described and illustrated. 36 pp., illus. Sarcotherm Controls, Inc., 280 Madison Ave., New York 16, N. Y.

NAILING CHANNELS

Nailock Steel Channels. The use of steel channels in walls, partitions and ceilings is described in a booklet showing details for attaching various materials in a variety of locations. The construction of acoustical ceilings is given special consideration. 8 pp., illus. The Sanymetal Products Co., Inc., 1677 Urbana Rd., Cleveland 12, Ohio.*

SKYLIGHTS

American Skylights. Ventilating skylights, their specifications and construction are considered in a folder which illustrates typical installation and its operation. Glass block skylight construction is also discussed. 4 pp., illus. American 3 Way-Luxfer Prism Co., 24 North Pulaski Rd., Chicago 24, Ill.*

SOLAR GUIDES

The Solarmeter Solves Them. Folder describes the method of using the data covering solar angles for various dates and times throughout the year, as furnished by the Solarmeter guides, for determining the orientation of buildings, projection of overhangs, etc., in order to utilize or regulate solar penetration. 8 pp., illus. R. W. Justice, Box 122-D, Belvedere, Marin County, Calif.

TERRAZZO FLOORS

Norton Floors. Characteristics of and specifications for terrazzo floors are given, with alundum terrazzo aggregate incorporated in mix to assure permanent non-slip surfaces. Other alundum products, developed for wear resistance and safety, which are described in this booklet, are cement, mosaic tile and stair and floor tile. 8 pp., illus. Norton Co., Worcester 6, Mass.*

LITERATURE REQUESTED

The following architects and organizations request manufacturers' literature:

Alden De Hart, Architect, 203 Park Ave., Plainfield, N. J.

Gulf Construction Co., 66 Court St., Brooklyn 2, N. Y.

A. G. Hassanein, Architect, 34 Khairat St., Cairo, Egypt.

Gustav R. Olson, Architect, Service Mutual Bldg., Waco, Texas.

Percy Jones Hospital Center, Army Service Forces, Sixth Service Command, Fort Custer, Mich.

Lee Perry, Architect, 419 North Ave., New Rochelle, N. Y.

Simco, Ltda., Construction Materials, Santiago, Chile.

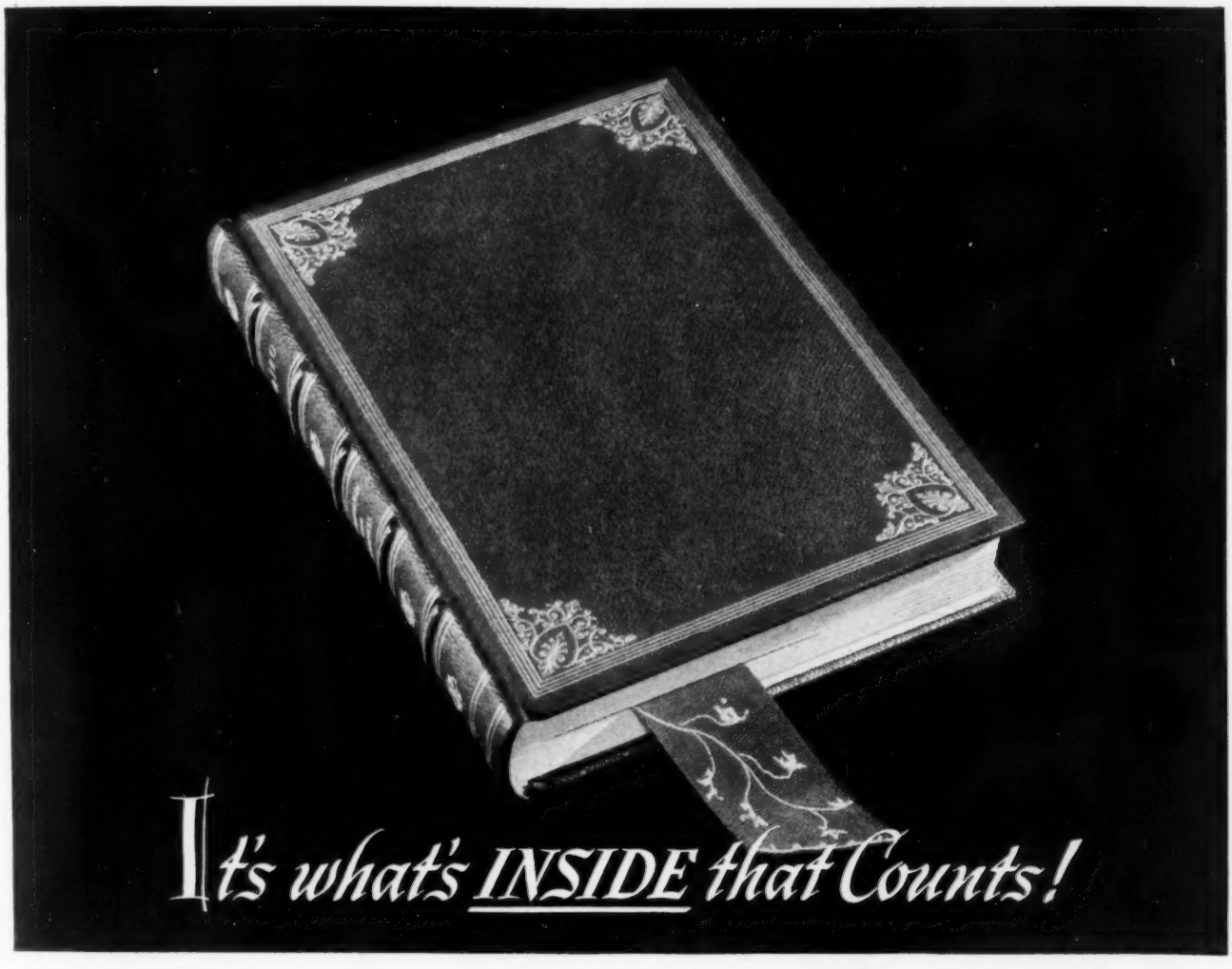
B. Robert Swartburg, Architect, 627 Lincoln Rd., Miami Beach 39, Fla.

Veterans Adm., Technical Section of Construction & Supplies Service, Branch Office No. 2, 299 Broadway, New York.

Bernard A. Webb, Jr., Architect, 704 Bankers Insurance Bldg., Macon, Ga.

Robert Wilmsen, Architect, 404 Tiffany Bldg., Eugene, Ore.

* Other product information in Sweet's File, 1946.



NO MATTER how fine the cover—it's the "inside story" that decides the quality of a book.

It's what's *inside* that makes the big difference in performance of a fine building product, too.

Take the long, tough fibres in the core of Celotex cane fibre building products, for example. These closely-woven fibres imprison millions of tiny air cells—create the ideal insulating qualities of Celotex board.

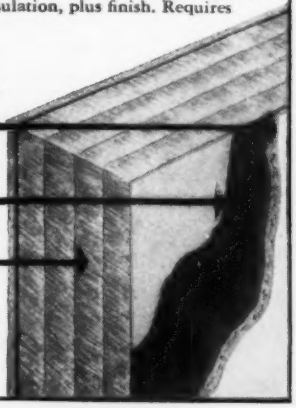
Examined under a magnifying glass, the serrations or hooks on each fibre can actually be seen. These interlocking hooks—more like bamboo than any other domestic fibre—give Celotex products their superior structural strength and durability.

All Celotex insulation board products are specially processed to make them water resistant—and treated by the exclusive Ferox process to protect them against dry rot and termites. They're easy to handle, easy to apply, economical to use.

So look to—and learn to depend upon—these quality cane fibre building products made by The Celotex Corporation. And keep in mind that on literally hundreds of thousands of building jobs they have *proved* that *they have the inside quality that counts.*

Quick Facts **on Cemesto—a typical Celotex cane-fibre building product**

A multiple-function material used in home and industrial building jobs as wall units, room partitions, and roof decks. Cemesto is fire and moisture resistant, eliminates need for intermediate support, combines in *one* material both exterior and interior surface, plus insulation, plus finish. Requires no painting.



1/8" cement-asbestos surface for exterior and interior finish.

Water and vapor-resistant bituminous adhesive bonds both exterior and interior surface to cane fibre core.

Celotex cane fibre insulation core.

Color: Warm grey.
Sizes: 4′ wide x 4′, 6′, 8′, 10′ or 12′ long in thicknesses of 1 1/8", 1-9/16" and 2".

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ACOUSTIC RATINGS OF FLOOR TYPES

Panel	T.L. (transmission loss) in db. at Various Frequencies						Weight
	128	256	512	1024	2048	4096	#/ft.²
F-1	23	24	34	41	48	60	17.1
F-2	48	47	41	50	49	—	11.5
F-3	48	48	41	50	49	—	12.3
F-4	58	58	55	62	58	—	12.8
F-5	58	60	54	63	56	—	13.6
F-6	53	54	49	55	55	—	12.6
F-7	62	65	57	69	62	—	16.1
F-8	34	43	52	59	65	72	—
F-9	42	52	60	67	77	83	—
F-10	40	48	54	66	63	72	—
F-11	51	55	59	57	53	—	54.4



F-1

2"x 8" JOISTS - 16" O.C., 13/16" OAK FLOORING, SUB-FLOOR, METAL LATH, ½" GYPSUM PLASTER



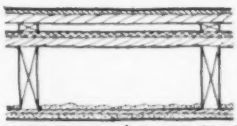
F-2

13/8" HARD WOOD FLOOR, SUB-FLOOR, 2"x 6" WOOD JOISTS, WOOD LATH, ½". PLASTER



F-3

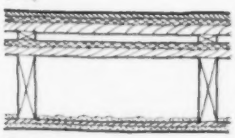
SAME AS F-2, EXCEPT ½" FIBERBOARD BETWEEN ROUGH & FINISH FLOOR



F-4

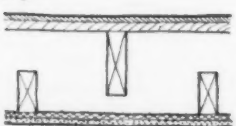
3/8" HARDWOOD FLOOR, SUB-FLOOR, 3/4"x 2" NAILING STRIPS (SEE NOTE) ½" FIBERBOARD, SUB-FLOOR, 2"x 6" WOOD JOISTS, WOOD LATH, ½" PLASTER.

NOTE - ROUGH & FINISH FLOOR NAILED TO NAILERS; NAILERS NOT NAILED THROUGH FIBERBOARD: MERELY RESTING THEREON.



F-5

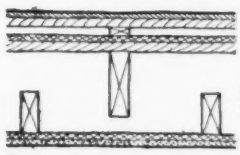
SAME AS F-4, EXCEPT ½" FIBERBOARD BETWEEN ROUGH & FINISH FLOOR



F-6

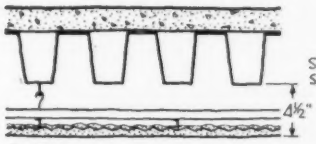
3/8" HARD WOOD FLOOR, SUB-FLOOR, 2"x 6" WOOD JOISTS - 16" O.C. SUSPENDED CEILING - 2"x 4" JOISTS - 16" O.C. ½" FIBERBOARD, ½" PLASTER

NOTE - COMMON END SUPPORT FOR BOTH JOIST SYSTEMS; NO INTERMEDIATE CONNECTIONS BETWEEN 2x6s & 2x4s.



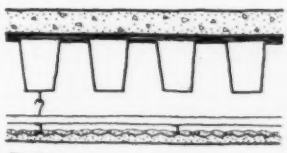
F-7

SAME AS F-6, EXCEPT ½" FIBERBOARD ON PRIMARY SUB-FLOOR. 3/4"x 2" NAILERS (SEE NOTE WITH F-4) PLUS ROUGH & FINISH FLOOR.



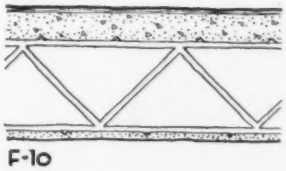
F-8

2" CONCRETE FILL, STEEL FLOOR SECTION, SUSPENDED METAL LATH, ½" PLASTER



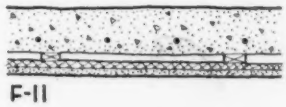
F-9

SAME AS F-8, EXCEPT ½" EMULSIFIED ASPHALT APPLIED BEFORE 2" CONCRETE FILL.



F-10

BATTLESHIP LINOLEUM, 2½" CONCRETE FILL ON HIGH-RIB METAL LATH, 8" MAC-MAR JOISTS, HIGH-RIB METAL LATH, 3 COATS GYPSUM PLASTER



F-11

4" REINF CONCRETE SLAB, 3/4"x 2" FURRING, ½" FIBERBOARD LATH, ½" GYPSUM PLASTER



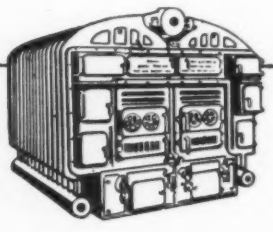
"Looks like we're ALL for Cast Iron"

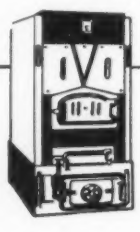
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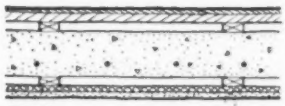
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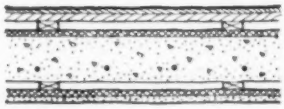
ACOUSTIC RATINGS OF FLOOR TYPES

Panel	T.L. (transmission loss) in db. at Various Frequencies						Weight
	128	256	512	1024	2048	4096	#/ft.²
F–12	59	57	55	68	65	—	58.1
F–13	58	58	56	66	67	—	58.9
F–14	—	51	47	50	60	—	83.0
F–15	—	52	48	50	55	—	109.0
F–16	57	57	56	58	59	—	69.8
F–17	63	63	61	66	74	—	73.5
F–18	64	70	63	64	69	—	74.2
F–19	68	68	66	72	76	—	72.8
F–20	36	38	39	47	54	55	—
F–21	37	47	58	69	73	80	—
F–22	43	50	61	71	77	80	—



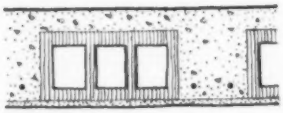
F-12

SAME AS F-11, EXCEPT ¾"x 2" SLEEPERS PLUS ROUGH & FINISH FLOOR ADDED, TOP



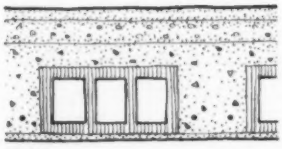
F-13

SAME AS F-12, EXCEPT ½" FIBERBOARD PLACED UNDER SLEEPERS



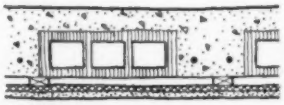
F-14

8" COMBINATION FLOOR, 6"x 12"x 12" 3-CELL TILE, ½" TWO-COAT GYPSUM PLASTER CEILING



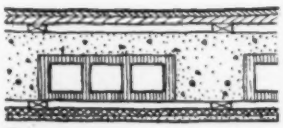
F-15

SAME AS F-14, EXCEPT 2" CINDER CONCRETE FILL PLUS 1" CEMENT TOPPING ADDED FOR FLOOR



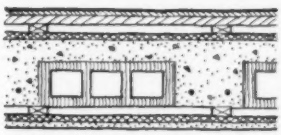
F-16

6" COMBINATION FLOOR, 4"x 12"x 12" 3-CELL TILE, ¾"x 2" FURRING-16" O.C., ½" FIBERBOARD LATH, ½" GYPSUM PLASTER



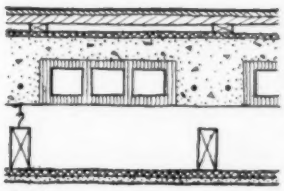
F-17

SAME AS F-16, EXCEPT ¾"x 2" SLEEPERS PLUS ROUGH & FINISH FLOOR ADDED, TOP



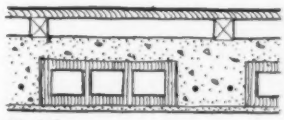
F-18

SAME AS F-17, EXCEPT ½" FIBERBOARD PLACED UNDER SLEEPERS



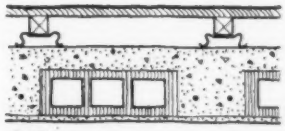
F-19

FINISH & ROUGH FLOOR ON ¾"x 2" SLEEPERS-16" O.C. RESTING ON ½" FIBERBOARD, 6" COMBINATION FLOOR, 4"x 12"x 12" 3-CELL TILE, SUSPENDED 2"x 4" JOISTS, PLUS ½" FIBERBOARD LATH, ½" GYPSUM PLASTER



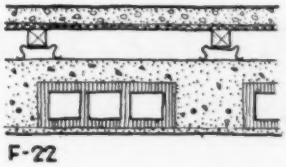
F-20

13/16" OAK FLOORING NAILED TO 2"x 2" SLEEPERS-16" O.C., SLEEPERS GROUTED ON 6" COMBINATION FLOOR (SIMILAR TO F-19), ½" TWO-COAT GYPSUM PLASTER CEILING



F-21

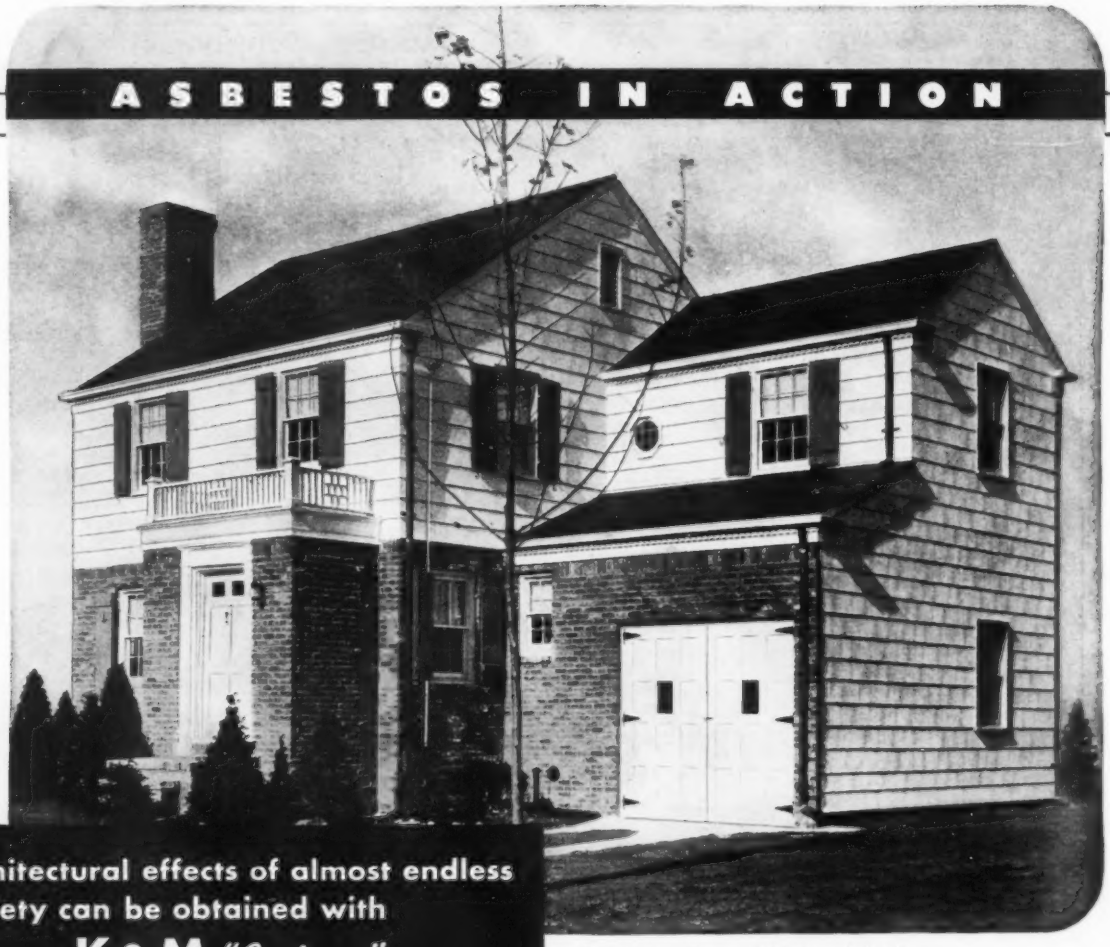
SAME AS F-20, EXCEPT 2"x 2" SLEEPERS CARRIED ON RESILIENT STEEL CLIPS



F-22

1½" HYDROCAL ON ½" GYPSUM PLASTERBOARD, 2"x 2" SLEEPERS-16" O.C. ON RESILIENT STEEL CLIPS, 6" COMBINATION FLOOR (SIMILAR TO F-20) ½" TWO-COAT GYPSUM PLASTER CEILING

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K & M *"Century"*

ASBESTOS-CEMENT SIDING

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Write for full particulars regarding these and other K&M Asbestos-Cement products . . . K&M "Century" Roofing Shingles, K&M "Century" APAC sheet material.

* * * *

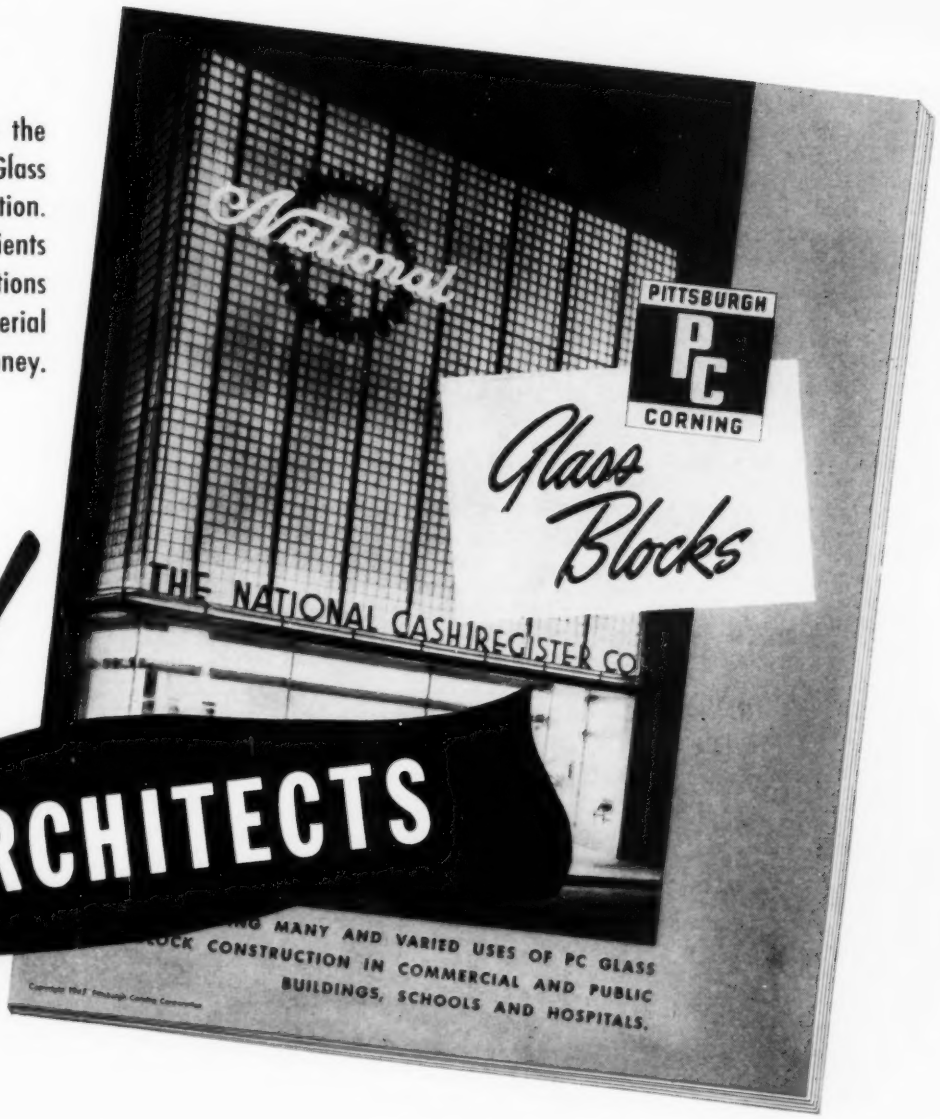
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(*Continued from page 116*)

ings. Here again simple systems are almost as effective as the patented ones.

Porous materials, which are good sound absorbers, do not make good sound insulators: the sound goes right through such materials (cf. W-28, W-29, and W-30).

One might consider a sound-isolated room as a box within a box with the inner one connected to the outer one no more rigidly than necessary and at as few points as possible.

Impact isolation

Common sources of impact sounds are footfalls on hard floors, pianos and radios, flowing water in pipes rigidly connected to the building structure, rotating machinery bolted rigidly to the floor.

Such sounds are conducted through the structure and may be classified under 2 of the paragraph headed "Factors affecting sound transmission."

Cork or rubber tile floors will reduce footfall impacts, but a heavy carpet with an underliner is most effective. Very little may be gained by installing a suspended ceiling below the offending source and leaving a hard floor of either wood or masonry above. Basically the masonry floor is the better insulator because it requires more energy to set it in motion. (*Mass* counts most here.)

Pianos and radios put out a high energy level, and if resting directly on a hard floor surface will tend to set the entire floor into motion as a sounding board, much as a tuning fork is amplified by placing it in contact with a table top. By placing a radio in large caster cups on a thick pile rug this contact is greatly reduced with resulting improvement. It should be borne in mind, however, that sound from the radio may still be transmitted through the floor, or wall, by method 3.*

A piano may be considered in a similar manner, and may be isolated in a similar fashion. Because of the fact that a piano is heavier, cups with larger areas in contact with the rug, (or better, with properly designed supports) are necessary so that the load per unit area does not crush through the rug to make a semi-rigid contact with the floor. A truck cannot be supported on baby buggy springs: the frame would rest on the axles. Conversely a baby buggy should not be supported by truck springs.

Water pipes may be wrapped with strips of hair felt where they touch the building structure, or at hangers; this is also true of soil pipes in frame construction. Glass, or rock wool in the one stud space around the soil stack often aids in muffling the sound.

The non-rigid mounting of rotating machinery on suitably designed vibration isolators is now too well known to consider in detail. The baby buggy-truck spring theory holds for this also.

The introduction of any discontinuity in the path of the sound is desirable. Such discontinuities should consist of materials which are elastic, and differ largely in density as compared with the rest of the structure. Isolation as close to the source of the noise as possible is always desirable.

Masking effect

The noise level within the quieter room has a pronounced effect on the design of a sound insulating partition. A

(*Continued on page 132*)

* *In order to obtain the necessary articulation from a radio, it is necessary to turn up the volume control, so that the sound level is often much higher than normal human speech. Radio reproduction, from an articulation standpoint, is not too good many times because listeners turn the tone control to accentuate the bass which defeats good articulation. Also, if a person speaks to another at a low sound level, which would possibly give rise to poorer articulation, the listener will make up for this by a certain amount of unconscious lip-reading!*

KITCHEN PLAN NO. 35: Thirty-fifth of a series of successful mass-feeding kitchen plans.

The Chelten House, 123 Chelten Avenue, Germantown, Philadelphia, caters traditional Philadelphian cookery to a discerning clientele from this straight-line kitchen plan.

KEEP FOR HANDY REFERENCE!

COOKING EQUIPMENT USED:

KITCHEN
- (a) 1 Vegetable steamer
- (b) 1 NO. 952 BLODGETT GAS-FIRED ROASTING OVEN
- (c) 2 Solid top gas-fired skeleton ranges (tops only)
- (d) 1 Open top gas-fired skeleton range (top only)
- (e) 4 Gas-fired deep fat fryers
- (f) 2 Gas-fired ceramic broilers

BAKESHOP (not shown in drawing)
- (a) 1 NO. 963 BLODGETT GAS-FIRED BAKE OVEN
- (b) 1 Gas-fired hot plate

BASEMENT (not shown)
- (a) 1 7 h.p. gas-fired steam boiler (steam for urns, tables, stewers, etc.)

Designed by: The Arbycraft Co., kitchen equipment manufacturers, Philadelphia, Pennsylvania and Stanley Kunsman, gas equipment consultant, Philadelphia Gas Works Co.



The NO. 952 BLODGETT GAS-FIRED OVEN in use at this installation has two sections, each separately controlled and each equipped with an extra removable shelf. Its capacity is well over 500 lbs. The NO. 963 BLODGETT BAKE OVEN will provide six-pan, 36-pie capacity in three independently controlled sections. For details and specifications of BLODGETT OVENS consult your equipment house or write

The G. S. BLODGETT CO., Inc.
50 Lakeside Avenue Burlington, Vermont

Reprints of this new series will soon be available to architects on request

Facts about Kimpreg*

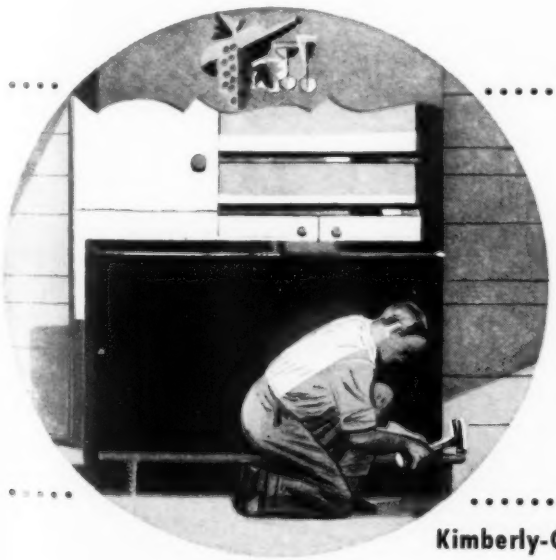
The new plastic armor for plywood



SCUFFPROOF; WEATHERPROOF—Plywood with the character of plastic! That's the wonder-working material produced by surfacing plywood with Kimpreg.* It's weatherproof—unaffected by temperature extremes or moisture. And durable—*Kimpreg makes fir plywood up to 5 times more resistant to wear when dry and 33 times when wet.*



WASHABLE—Kimpreg is as washable as enamel. It's colorfast—color is fused in. It's stainproof. It's unaffected by weak alkalies or commercial solvents, completely impervious to alcohol. And Kimpreg-ed plywood is *25 to 30 times* more resistant to moisture than ordinary plywood.



READILY WORKED—Kimpreg plastic surfacing provides a finish of flint-like quality. Yet Kimpreg-ed plywood is flexible—can be cut, formed and fastened readily with the same techniques used for ordinary plywood. Find out more about this wonder-working new material. Mail the coupon today.

Kimberly-Clark Corp., Neenah, Wis.

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Firm _____

Type of Business _____

Address _____

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Kimpreg
REG. U.S. PAT. OFF.
PLASTIC SURFACING

A PRODUCT OF Kimberly Clark RESEARCH

*TRADE MARK

(*Continued from page 130*)

partition that is suitable in one place, such as between a bowling alley and a restaurant, would not be suitable between a bowling alley and a hotel bedroom. The noise level in the restaurant is higher and tends to mask the sound coming through the partition. Hence a less effective wall may be tolerated here than in the case of the bedroom.

The frequency of the disturbing sound is also an important factor. Almost any type of partition will materially attenuate high frequency sounds. At the low frequencies, the human ear in general is less sensitive than it is at mid and high frequencies.[6] This is of benefit when considering the design of a partition, since a lower T.L. may be tolerated at the lower frequencies. On the other hand most common noises often have larger components of energy at these low frequencies.

It is not possible, therefore, to assign a single "average" number to a given partition structure and expect to tell the complete story. If heavy machinery in a room all by itself is to be insulated against, the sound insulation of the higher frequencies is of little importance. And if a room full of peanut whistles is encountered, the low frequency insulation of the partition doesn't count.

In addition to other factors, it is also necessary to know the frequency of the sound involved before a suitable partition can be decided upon.[7]

Rating the T.L. of a partition

The following information will give some idea as to the effectiveness of a partition.

T.L. 30db. or less — Poor
Ordinary conversation may be heard and understood.

T.L. 30 to 35db. — Fair
Loud speech may be understood if conditions are quiet.

T.L. 35 to 40db. — Good
Loud speech is audible, but not understandable. Normal speech is heard faintly.

T.L. 40 to 45db. — Very Good
Loud speech is faintly audible. Normal speech is inaudible.

T.L. 45db. or greater — Excellent
Do not overlook the residual noise level on the listening side of the partition and its effect on the apparent insulation of the partition.

In a Nutshell

Homogeneous walls must be excessively heavy to be good sound insulators. Loosely connected layers of different densities provide more effective sound insulation for a given total weight. Small openings may almost completely nullify an otherwise good sound-insulating partition.

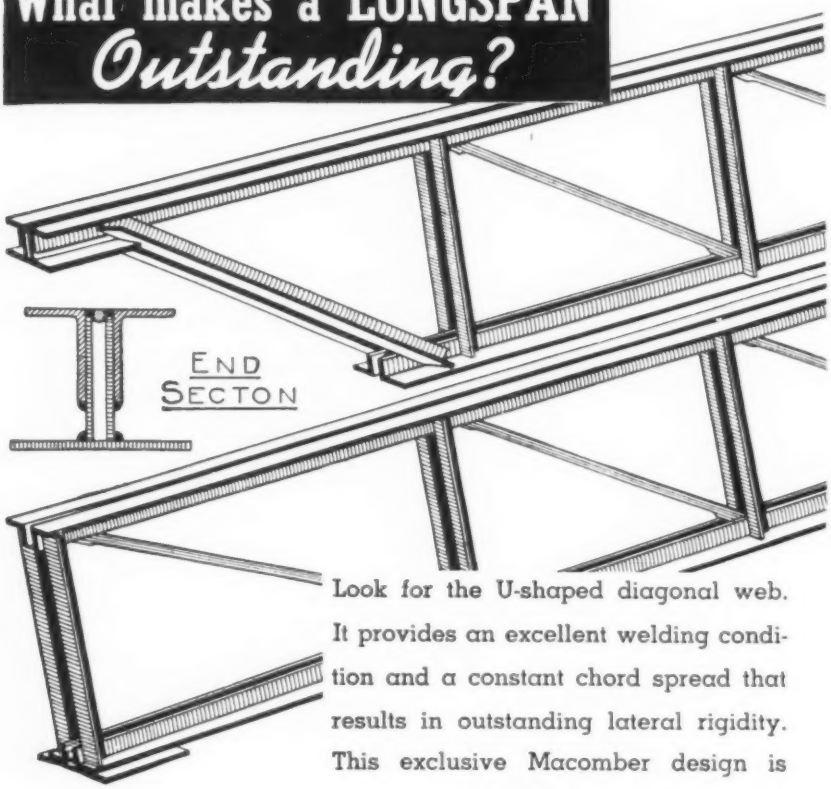
Typical Partition Structures

The tables, pp. 117, 125, 127, taken largely from work done by the U. S. Bureau of Standards, were designed to present typical partition constructions and to give their sound insulating characteristics and weight. They are laid out principally as to classes of construction, such as wood, plaster, masonry, etc.; in many instances they show what happens to a partition as various elements of the construction are changed. Some of the partitions are costly for the amount of insulation obtained, others are too heavy for many uses.

It is hoped, however, that this summary of types may aid the architect and builder to select the type of construction best suited to his needs. And with a little study of the principles involved, the designer may feel reasonably safe in designing his own structure to meet his own specific needs.

A word of caution is in order, however; whenever in doubt, seek out someone with experience in the acoustical field.

What makes a LONGSPAN *Outstanding?*



Look for the U-shaped diagonal web. It provides an excellent welding condition and a constant chord spread that results in outstanding lateral rigidity. This exclusive Macomber design is made in underslung or square end types with sloping or parallel chords in lengths up to 70 feet. Here is a completely standardized structural unit, specified from load and span tables for unobstructed floor or roof support. Get our complete design information for your next project.

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Behind these "Packaged" Air Conditioners stands Chrysler Corporation, famed for engineering and mass production skill—your assurance of high quality, dependability and low cost. • Airtemp Division of Chrysler Corporation, Dayton 1, Ohio. In Canada: Therm-O-Rite Products, Ltd., Toronto, Ontario.

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CHRYSLER AIRTEMP

HEATING • COOLING • REFRIGERATION

(*Continued from page 120*)

every six minutes if desired and carrying away dust, odors, and germs. Fresh air enters the house through a duct system in the roof and beneath the house. (See diagram). The flow of warm and cold air inside the house is fountain-like. Heating engineers estimate that heating or cooling costs will be one-fourth that of comparably sized conventional houses. Complete thermal tests are now being conducted.

Resistance to the elements. The house is designed to withstand indicated wind velocities of 180 miles per hour (the velocity at Okinawa's typhoon).

The ribs lead to a circular gutter which runs all around the house inside the walls at the lower edge of the roof. From this gutter, rain water drains through downspouts to a second circular gutter near the base.

The location of the roof drainage system *inside* the outer wall keeps water from freezing and also gives easy access for cleaning if a gutter is blocked. A further advantage is that the system collects moisture which condenses on the *inside* of the roof.

The interior design of the house lends itself to a great variety of decorative treatments and furnishings. The house as delivered requires no further interior decoration, but the owner, if he chooses, may apply mirrors to partitions, additional plywood panels, different colors, etc. There are many outlets for lamps.

Closet and shelf space. The suspension-type construction frees all interior partitions from the load-bearing function of the conventional wall. All partitions, therefore, are hollow and are utilized to provide ample storage, closets and shelves.

Deep closets are located in the entrance hall and in both bedrooms. They include compartments for handbags, suitcases and other storage, and plexiglas-enclosed hat racks. The closet doors revolve and swing out to give easy access to semi-circular clothes and shoe racks mounted on the inside of the doors.

Doors. Exterior doors, one opening onto the entrance hall and the other from the kitchen, are of airplane type construction. Inside doors are of metal, covered with a flexible plastic. These doors do not swing, but conserve space by opening and closing like an accordion.

Assembly takes only 160 man hours — two days' work for a 10-man crew. All parts, therefore, are designed so that one man can apply and fasten them. No part weighs more than 30 lb. Parts will be shipped from the factory in a single, cylindrical steel container of 300 cu. ft. capacity — 16 ft. × 4½ ft. in diam. Kitchen equipment will be crated and shipped separately. Eight units can be packed in one box car.

Prices. Based on planned production of at least 50,000 units per year, the house will sell for no more than $6500 erected and ready for occupancy, but exclusive of land and municipal utility lines. Price includes the following utilities: heating, ventilating and air conditioning, and complete kitchen with sink, range, electric refrigerator, washing machine, clothes dryer, dishwasher and waste disposal unit.



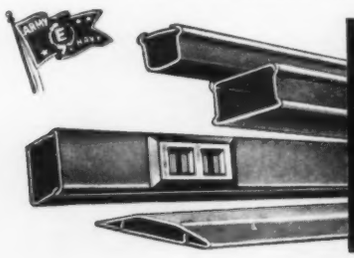
ADEQUATE WIRING...THE FIRST STEP
toward Adequate Lighting

Whether you are concerned at the moment with new construction or with modernization of present buildings, lighting is naturally one of your first considerations and that in turn means WIRING...*adequate in capacity, in location and in adaptability* to your special requirements as architect.

If you "Know your Wiremold"... the many different sizes and types available... its many specialized features and uses... its convenience, economy, interconnectability and all-around adaptability to both standard and special needs... you will immediately see many opportunities to do a better wiring and lighting job.

We will be happy to give you full technical cooperation. Write us for engineering data sheets covering the type of installation you are interested in. Also see our catalog insert in your current Sweet's File.

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A *New Achievement*

IN WINDOW WEATHER-TIGHTNESS ... NEW SELF-FITTING SILENTITE

NEW WEATHER-TIGHTNESS—Made of wood—in itself a nonconductor of heat and cold—the new Silentite has "floating" chemically treated wood sliding bars, and these are seated on full-length double Z-type bronze weather-strips. Sash (A) operates against sliding bead (D), which presses against metal Z-type weather-stripping (C) in frame (B). The new design of the meeting rail overcomes the problem of weather-stripping between two window sections!

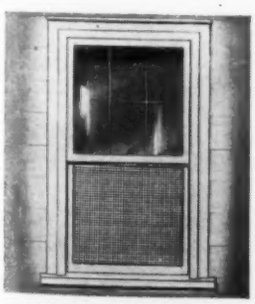
• No window can be modern unless it is truly weather-tight. And in the new Self-Fitting Silentite, Curtis engineers have utilized entirely new principles to provide complete weather-tightness in a double-hung window. The weather-stripping in the jamb channels is *self-fitting* (See diagram). A new design of meeting rail overcomes the problem of weather-stripping the space between the two window sections. An improved head weather-strip is employed. Extreme weather-tightness is obtained between frame members and frame and wall. There are no through cuts in jambs, thus eliminating air leakage. The new Silentite is 20% more weather-tight than the old unit. Weather-tightness is only *one* of the many features of this new Silentite—below are some of the others.

1865 CURTIS WOODWORK SILENTITE PRE-FIT the "Insulated" window

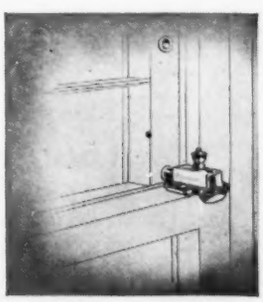


GREATER BEAUTY—Twelve designs of windows from which to choose—numerous styles of attractive bays, corner windows, window groups, all are yours with the new Silentite Self-Fitting Window!

In Canada: W. C. Edwards & Co., Ltd., Ottawa



DOUBLE UTILITY—Removal and storage of storm sash and screens is eliminated with the new convenient Curtis combination screen and storm sash unit. Or, separate pre-fit screens and storm sash, hung from the inside, may be used.



NEW SAFETY LOCK—The new Self-Fitting Silentite locks in a closed or partly open position—new safety from intruders when ventilation is desired. New-style sash lock—marked "Silentite"—furnished with each window unit.



SIMPLE INSTALLATION—See how easy it is to install the new Silentite Self-Fitting Window! The sash is put in with minimum effort—yet, once installed, is firmly in place. Here's a big economy in installation.

CURTIS COMPANIES SERVICE BUREAU
AR-5S Curtis Building
Clinton, Iowa

Gentlemen: Please send me full information on the new Silentite Window line.

Name.....

Address.....

City.....*State*.....

(*Continued from page 121*)

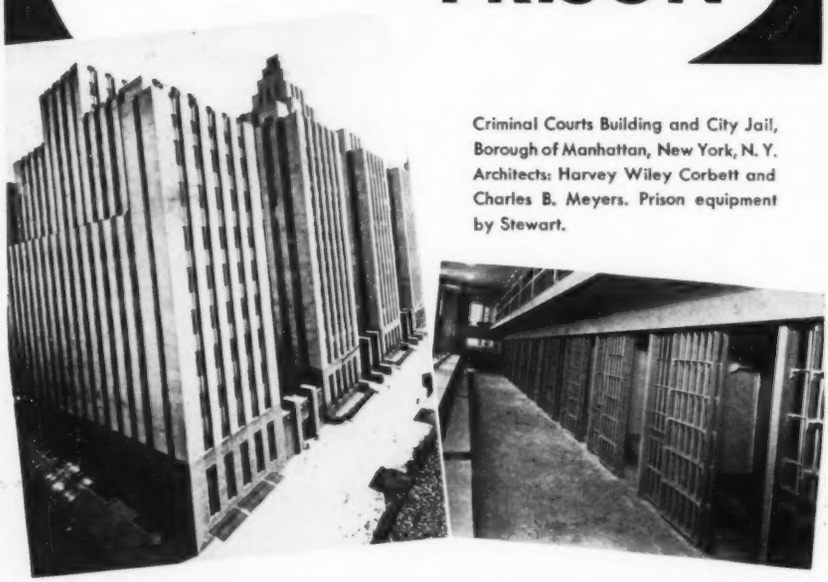
STERILIZING SPOUT

Test results show effective automatic sterilization of water by the *Microb-Master* automatic dispenser, a new swivel spout developed for use in dish-washing in commercial and institutional establishments to prevent the transmission of saliva-borne diseases. When turned on over one sink the spout releases pure water. When the spout is swung over the other sink, the dispenser mixes a measured proportion of disinfectant with the water. The chrome plating of the slim and attractive faucet is treated for corrosion resistance. A small unbreakable plastic bell on top serves as a reservoir for the disinfectant. Solfred Mfg. Co., Glendale, Calif.

UNIT WINDOW

Available in either steel or aluminum, the *American Home* window is a packaged unit complete with screens and storm sash. Outside trim is factory fitted, and a choice of three types of interior trim, including wood is offered. To secure ventilation in winter a single hand-turned operator controls both window vent and storm sash. Mesker Bros., St. Louis 2, Mo.

HERE'S ANOTHER Stewart EQUIPPED PRISON



Criminal Courts Building and City Jail, Borough of Manhattan, New York, N. Y. Architects: Harvey Wiley Corbett and Charles B. Meyers. Prison equipment by Stewart.

Among the more recent prison equipment installations by Stewart is the one illustrated. It is indicative of the close collaboration between the architects who designed the structure and Stewart engineers. This same service is available to all architects, builders and prison authorities whether the plans call for new construction, remodeling or rehabilitation, and for any size installation from a village lockup to a federal penitentiary. Stewart equipment includes Grating and Plate Cells; Doors; Lock and Locking Devices; Bunks; Tables; Seats; Iron Stairways, and all modern jail and prison equipment. You are cordially invited to avail yourself of the technical facilities offered by Stewart.

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1377 Stewart Block - - Cincinnati 1, Ohio
"Designers and Builders of Jail and Prison Equipment Since 1886"

VENTILATING LOUVER

A weatherproof attic ventilator has a frame and flanges stamped from a single sheet of metal with metal louvers permanently welded into position. The Ventilouver is designed to fit between two normally-spaced studs. It requires no special wood framing, for it is fastened outside the sheathing with nails passing through the flanges, which are later covered by the siding. The Swartwout Co., 18511 Euclid Ave., Cleveland 12, Ohio.

COOLING BLOWERS

A new postwar line of overhead blowers for low temperature cooling provides for different velocities of air speed for various cooling jobs. Louvers are individually adjustable to permit a controlled flow of air. The Rempe Co., 340 No. Sacramento Blvd., Chicago 12, Ill.

UNIT AIR FILTER

A new electronic air filter, the *Electro-Cell* unit, is simple to install, gives excellent performance and is easy to maintain. Removable collector plate assemblies slide in and out in a manner similar to desk drawers, and may be removed easily for cleaning. The manufacturer states an automatic washing device has also been developed, permitting washing of collector plate assemblies in places where manual washing is not feasible. American Air Filter Co., 125 Central Ave., Louisville 8, Ky.

PERMANENT AWNINGS

Interiors 5 to 15 degrees cooler are achieved through the reflection of the sun's rays by aluminum awnings. Made of thin strips, the *Alumaroll* awning rolls up and down easily, and forms a compact roll at the top of the window when not in use. Available in three baked enamel colors in addition to the natural finish, the maker asserts they are corrosion proof and will not sag or rattle. Mercready & Co., 605 Broad St., Newark 2, N.J.

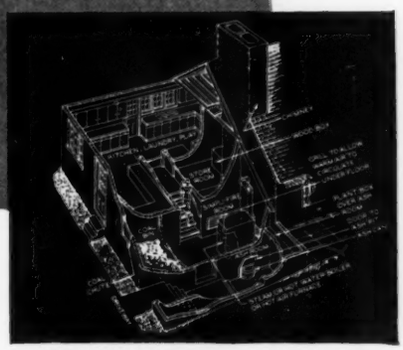
WALL CHANNELER

A new machine, looking much like an electric buzz saw attached to the end of a vacuum cleaner hose, has been developed to cut precise channels in plaster walls for the easy installation of personalized heating in existing apartment houses.

The portable "saw" with tungsten carbide teeth is used to cut a groove in the plaster wall, the tool "inhaling" the

(*Continued on page 138*)





SIMPLI-FIRE ROOM . . . heart of the Answer Home. Note its compact simplicity. See how simple it is to feed the heater . . . how ash shoveling is eliminated.

Anthracite Simpli-Fire Room provides more house, more heat, for less money

AS AN ARCHITECT how can you help prospective home owners meet today's rising costs? Must you offer them less and less house . . . fewer, smaller rooms . . . inadequate heating?

Anthracite Institute tackled this problem on the basis that heat is a necessity only part of the year; that money could be saved on a scientifically engineered heating arrangement, and used to buy more house.

The result is the Answer Home with the *Simpli-Fire Room*, one of the most far-reaching developments in years.

1. Conveniently located, a few steps down from the kitchen, the *Simpli-Fire Room* eliminates all need for the costly, old-fashioned cellar, saves construction time, *reduces overall cost.*

2. Heating costs, too, are lower, since the *Simpli-Fire Room* is designed for anthracite, the economy quality fuel.

3. Thanks to the *Simpli-Fire Room*, the use of anthracite becomes easier than anyone ever dreamed. The storage bin is within easy shovel reach of the heater. Ashes fall into a light metal basket, which is removed *outside the house*. Ash shoveling is a thing of the past—along with dust and dirt!

4. Type of heating is optional . . . steam, hot water, or warm air . . . with specifications bearing the Seal of Approval of the Anthracite Institute available for each system. Plenty of heat is assured with warm, healthful floors.

Answer Home No. 1 featured above is beautifully planned—the type of home families dream of owning—*sometime*. Thanks to the *Simpli-Fire Room* it is a home thousands can own—*soon*.

Architects are invited to write for definitive drawings together with details of plan of co-operation.

For FREE Plans of this Answer Home—and others—Fill out, mail coupon today

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Please send free of charge handsome 16-page color brochure showing Answer Homes Nos. 1, 2, and 3 with floor plans; also details of Simpli-Fire Room.

NAME_____

FIRM_____

STREET_____

CITY_____ ZONE____ STATE_____

Please print carefully or type

(*Continued from page 136*)

dust in its own vacuum cleaner. The copper tubing is then buried inside the groove and covered with a special plastic filler and masking tape said to make the finished job unnoticeable. The entire operation, including mounting a thermostat and installing a valve, it is claimed, should take no more than an hour in the average apartment, and can be carried out without creating any dust or dirt. Minneapolis-Honeywell Regulator Co., 2804 Fourth Ave. S., Minneapolis 8.

WALL PRIMER

Priming and sealing plaster walls is accomplished in a single operation with *Plaster Grip*. When applied to walls that are still wet, the high alkali resistance of this sealing coat is said to prevent lime from burning through. The primer may also be used over old paint, and may be painted over in 48 hours. The high solid content provides an excellent grip for succeeding coats of paint, and frequently eliminates the need for one undercoat. Gillespie Varnish Co., Dey and Howell Sts., Jersey City 6, N. J.

FLOODLIGHTS

Tarnish-Proof Reflector

A pure-silver reflector lining hermetically sealed inside the new *Wabash-Birdseye Reflector Floodlite* is reported to be tarnish-proof, and therefore to remain at top reflecting efficiency. The filament is precision-mounted at the proper focal point so that the light beam is moderately concentrated, and fades to a soft diffusion at the edges. Wabash Appliance Corp., 335 Carroll St., Brooklyn, N. Y.

Adjustable Spotlight

Intense spot or floodlighting effects may be obtained with the *Hy-Liter* luminaire, which features easy adjustment within a 90° arc downward in all directions. Spot or flood type projector lamps are shielded by concentric enamel louvers which may be quickly turned and tilted. These louvers are mounted in simple rectangular plates, and the fixtures are made in styles for either surface or recessed mounting. The Edwin F. Guth Co., 2615 Washington Ave., St. Louis, Mo.

PHOSPHORESCENTS

New phosphorescent molding compounds have been developed to furnish greatly increased after-glow effect when used in plastic signs and markers. The 1200 series *Lustron* materials are available in various colors, Monsanto Chemical Co., Plastics Division, Springfield 2, Mass.

ROLLING DOOR CABINET

Designed to fit under a regular wall cabinet in the kitchen, a handy, two-shelf *Youngstown* kitchen cabinet for the storage of frequently-used small articles is made of white enameled steel, and has a door of burnished steel strips which slides up out of sight. Mullins Mfg. Corp., Warren, Ohio.

PLASTIC TOILET SEAT

A durable, moisture-proof, shatterproof toilet seat of open front construction is equipped with a self-sustaining hinge that permits easy raising and lowering, yet prevents slamming. The *Sperzel Model 50* toilet seat is molded of plastic in black and white to fit regular or elongated bowls. Sperzel Co., Dept. A-R, 911 Hennepin Ave., Minneapolis 3.

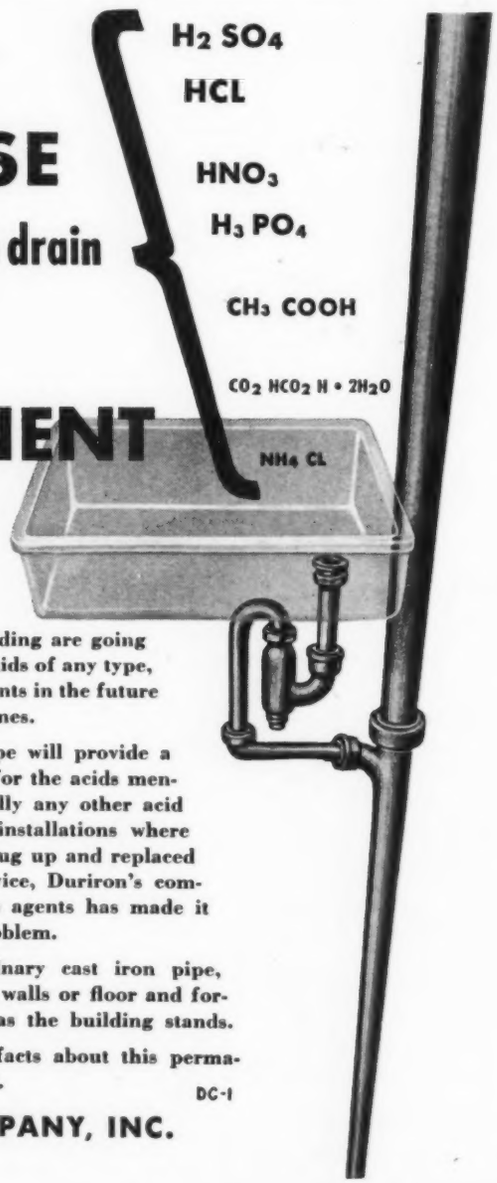
DRAWING AIDS

Perspective Layouts

Designed to assist the draftsman in perspective sketching, *Perspec* sketch pads are ruled with scaled grids related

(*Continued on page 140*)

Where THESE will go down the drain you need a PERMANENT PIPE



If the drains in your new building are going to handle metal-destroying liquids of any type, insure against costly replacements in the future by specifying Duriron drain lines.

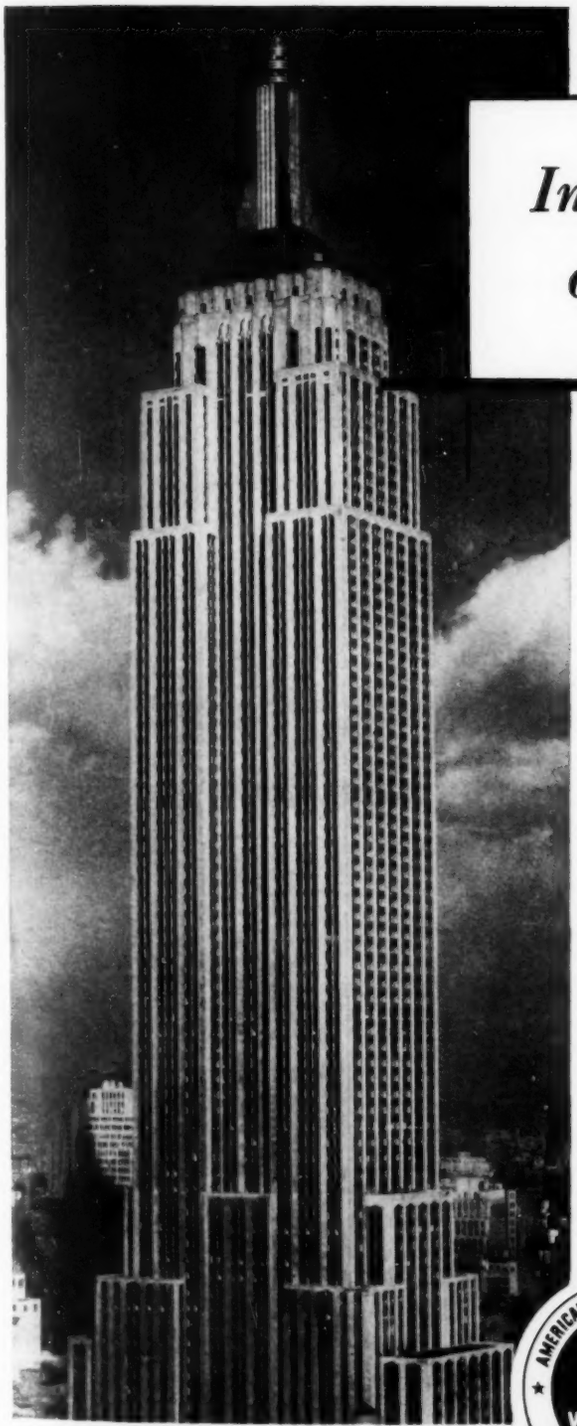
Duriron corrosion-proof pipe will provide a permanent, non-leak passage for the acids mentioned above and for practically any other acid or base. In corrosive-service installations where ordinary pipe has had to be dug up and replaced after comparatively short service, Duriron's complete indifference to corrosive agents has made it the ultimate answer to this problem.

Installed as easily as ordinary cast iron pipe, Duriron can be hidden in the walls or floor and forgotten. It will serve as long as the building stands.

Write today for complete facts about this permanent, corrosion-proof material. DC-1

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DRAIN PIPE



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World's Tallest Building, Cinder Concrete Arches,
Reinforced with American Welded Wire Fabric.

In the "Social Register" of prominent buildings

. . . the most widely used concrete reinforcement

IN the world's most prominent buildings and in all other forms of concrete construction, billions of square feet of American Welded Wire Fabric Reinforcement have been specified and used by leading architects, engineers, and contractors.

Closely spaced wires of cold drawn high yield-point steel, prefabricated by electric welding, form a mesh that gives the concrete slab added strength, greater resistance to impact stresses and strains in all directions. Many Building Codes recognize the extra strength provided by Welded Wire Fabric and require less steel than when larger members of hot rolled non-prefabricated reinforcement are used. Then, too, American Welded Wire Fabric is easily handled, quickly installed, lies flat, and stays in place. That means important savings in construction time and cost.

You can safely follow the lead of architects and engineers who planned the world's most prominent buildings — and specified the most widely used concrete reinforcement, American Welded Wire Fabric. Meanwhile, send in the coupon for our new illustrated book, 178 pages of helpful authoritative information on all sorts of reinforced concrete applications.

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Cleveland 13, Ohio

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Please forward my copy of "American Welded Wire Fabric for Concrete Reinforcement". It is understood that I incur no obligation.

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City..... State.....

U·S·S American WELDED WIRE FABRIC

(*Continued from page 138*)

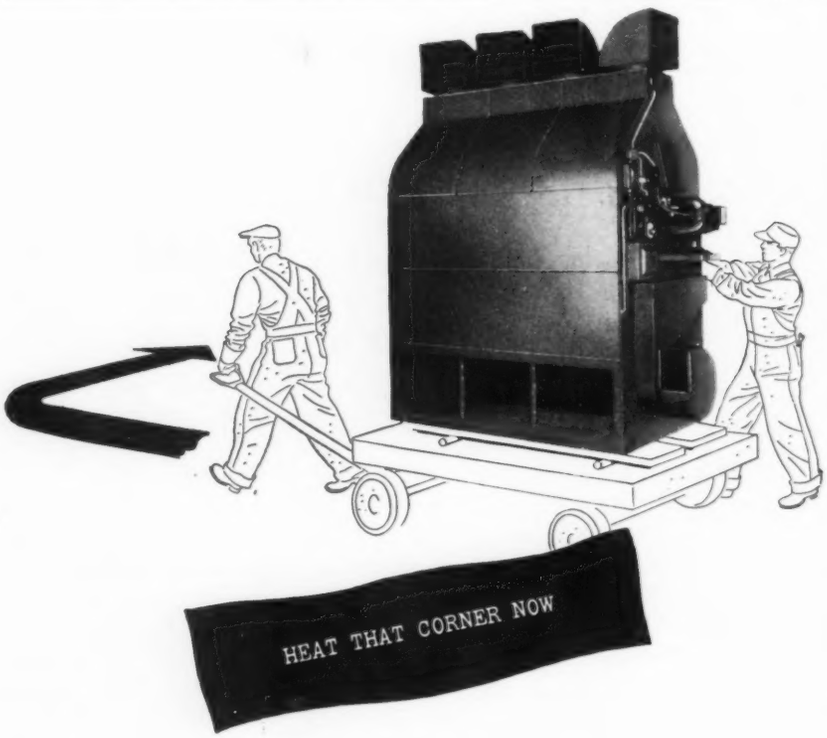
to fixed axes, in order to permit accurate measurements. Producer furnishes instructions on method of use. Herman Rueger, 408 South School Lane, Lancaster, Pa.

Plastic Stencils

The making of isometric drawings and dimetric drawings is simplified with *Instrumaster* stencils. Measurements in inch graduations at full scale are provided along one vertical and two slanted edges, which conform with the conventional axes. Stencils obviate the need for other scales and triangles. In addition, 27 elliptical openings represent circles from ⅛ in. to 2 in. in diameter. Instrumaster Industries, 7312 Arch St., Greenwich, Conn.

BETTER BLUEPRINTS

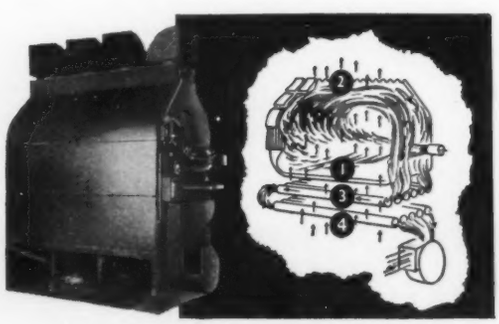
Applied as a water solution to the base paper before coating with light-sensitive materials, *Syton*, a modified silica product of Monsanto, reportedly provides greater sharpness in lines and increased fidelity especially noticeable on reproductions of tracings made wholly or in part with pencil. It is stated that the new process will often spare the necessity of retracing penciled drawings in ink. H. P. Andrews Paper Co., 14 West Third St., New York, N. Y.



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Dravo heaters are shipped to you complete, ready to connect and operate. Oil or gas fired heaters regularly yield 80–85% efficiency. There's nothing to freeze up, so no "stand by" loss is required. No specialized attendant is needed. Maintenance is negligible. Bulletin 514 – "Direct Fired Efficiency" is yours for the asking. – Address Dravo Corporation, Heater Department, 300 Penn Avenue, Pittsburgh 22, Pa.

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STANDARDS

Minimum Design Loads

Sponsored by the National Bureau of Standards, American standard building code requirements for minimum loads to be assumed in the design of buildings and other structures have been consolidated in a booklet. Included are provisions for dead loads, live loads, wind loads, roof loads, earthquake loads and soil and hydrostatic pressures. American Standards Assn., 70 East 45th St., New York 17, N. Y. 50 cents.

Tile Setting

Through the Battelle Memorial Institute of Columbus, Ohio, the Tile Council of America is initiating research to set standards for adhesives and other bonding compounds used for thin setting beds. Further standards will be established for underlayment, grouting and backing materials. To meet requirements of the tests, finished installations must remain satisfactory for the life of the building. It is hoped that by means of better and more rapid tile installations substantial reductions in cost may be effected.

Stock Doors

Printed copies of Old Growth Douglas Fir Standard Stock Doors (Third Edition), Commercial Standard CS73–45, are now available from the Superintendent of Documents, U. S. Govt. Prtg. Office, Washington 25, D. C., for 10 cents each.

The standard, effective for new production from Sept. 20, 1945, provides minimum specifications for four grades of stock fir doors in four thicknesses, and covers construction, defects, and the grading tolerances for these requirements.

SIMPLIFIED PRACTICE

Recommendations for Simplified Practice have been made, and are being circulated by the National Bureau of Standards for approval, covering the following items: Bronze or Brass Valves (Revised); and Wire Nails and Staples (Sponsored by American Iron and Steel Institute).

Simplified Practice Recommendation for Copper Water Tube and Copper and Brass Pipe, R217–46, has been approved by the industry and is effective from March 15, 1946. Division of Simplified Practice, National Bureau of Standards, Washington 25, D. C.



THE NEW YORK HISTORICAL SOCIETY *building on Central Park West, New York, was opened in 1908. Monel roofing was installed in 1938, when two Monel-roofed wings were completed.* Architects: Walker and Gillette.



ON THE ROOF. *Section of Monel standing seam roofing and Monel skylight caps and trim installed on The New York Historical Society by* J. J. Fisher, Brooklyn, N. Y.

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You'd almost expect a metal as strong and tough as this to be a headache for roofing contractors. But it isn't. They know Monel as a metal that is readily formed, even to irregular contours of ventilators, downspouts, cornices, gutters and skylight frames. They'll tell you that Monel can be readily applied for flat seam, batten seam or standing seam construction.

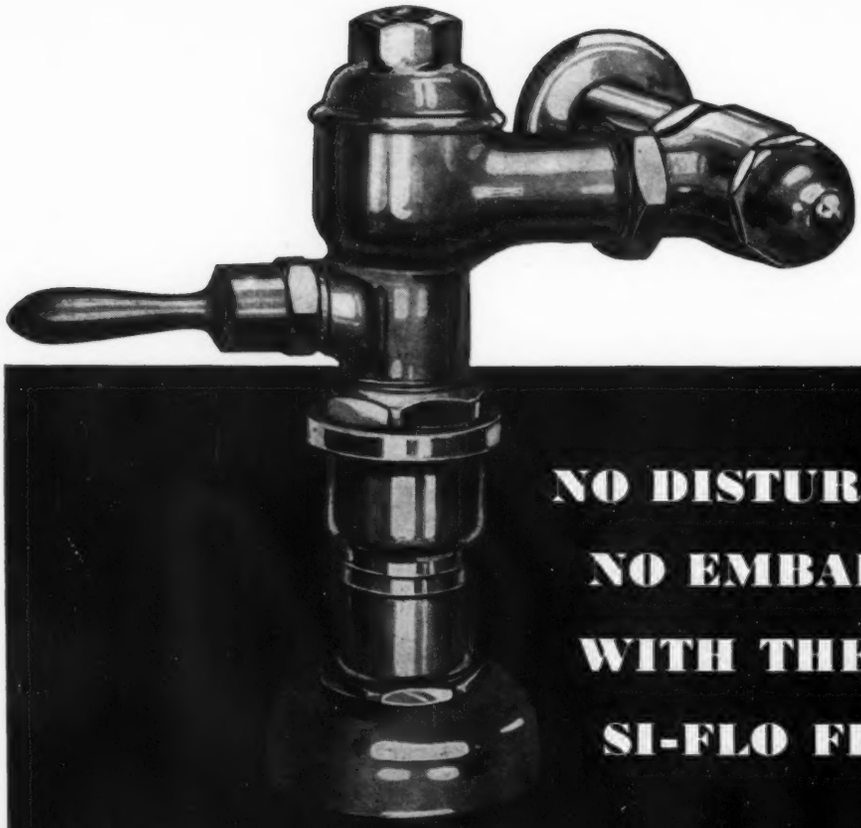
Where appearance is important, another characteristic of Monel is worth noting: weathering imparts a neutral tone which blends attractively with the building's architecural features.

Everything considered, Monel is the material to specify for roofs that *last* . . . and last *economically*.

*Reg. U. S. Pat. Off.

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THE RECORD REPORTS (*Continued from page 18*)

ties and the eventual dates when supply and demand will be balanced also are spotlighted in the timetable. Copies of "Scarce Materials Timetable" may be had at 25 cents each from the N.Y. Journal of Commerce, 63 Park Row, New York 15, N. Y.

Improvement Expected

Improvement in production of major construction materials is expected, following a general downward trend at the close of 1945, according to the February Report on Construction and Construction Materials, prepared by the Construction Division, Department of Commerce.

Construction costs and prices of materials continued to rise in December, with prices of materials reaching their highest level in 25 years, the Report states.

Highlights:

Steel — January production curtailed by the strike; sheet and strip are the tightest of all steel shapes and are expected to continue in short supply through the first half of 1946.

Lumber — Excess of demand over supply continues to keep both mill and distributors stocks at an all-time low. Unfilled orders for hardwood flooring in producers' hands equal to six to 10 months output at the present rate.

Concrete building blocks — Unfilled orders amount to more than double the current production rate.



WING *Revolving* UNIT HEATERS

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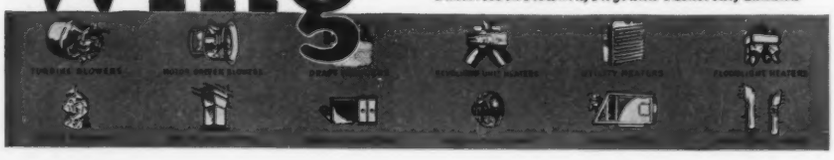
Write for a copy of Bulletin HR-4.

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PROJECTS APPROVED

Two new low-rent public housing projects of the New York City Housing Authority, to be financed with state funds, have been approved by the State Division of Housing. These projects, Navy Houses in Brooklyn and Lenox Houses in upper Manhattan, will be the 13th and 14th developments approved for New York City under Governor Thomas E. Dewey's state-wide housing and community development program.

Plans for Navy Houses call for the housing of 1,400 low-income families at an estimated over-all development cost of $10,953,800. To be built within the Brooklyn downtown redevelopment area of which the Brooklyn Civic Center will be a part, the project will take in approximately 19 acres, of which no more than 30 per cent will be covered by buildings.

Lenox Houses, in lower Harlem, will occupy an area of approximately 14 acres, and will provide accommodations for 1,320 low-income families at an estimated over-all development cost of $12,920,600.

NEW MUSEUM WING

A panoramic view of 4,000 years of Egyptian history is offered in the recently opened Egyptian Wing of the Metropolitan Museum of Art, New York. Five rooms have been arranged to give an over-all picture of how the Egyptian worked, lived, ate, dressed, farmed and amused himself.

SCHOOL NEEDS STUDIED

A survey of the school building needs of rural America, which will result in a portfolio of sketches, floor plans and basic suggestions adaptable to specific communities, is under way by Professors Frank W. Cyr and Henry H. Linn of Teachers College, Columbia University, assisted by John Marshall, school building specialist on leave from the West Virginia Department of Education, and Kenneth Bailey, architect on leave from the New York City schools. The study is being financed by a $10,000 grant from the General Education Board and has the sponsorship of the National Council of Chief State School Officers.

(*Continued on page 146*)

LATEST NEWS on SOUND INSULATION

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The portfolio is planned to cover four main types of school suited to the small community: the one- and two-teacher school; the three-, four- and six-teacher elementary school; the small high school; and the 12-grade building. There will be a section covering special features that can be incorporated into the rural school building such as a community canning center or movable partitions to change a room to the desired size. Exterior views will include suggestions for the schools' grounds, such as recreation facilities and the adaptation of the building to the local terrain and architectural style.

SCHOOL TO REOPEN

The Fontainebleau School of Fine Arts may possibly reopen during the summer of 1946 under the directorship of Jean Labatut, according to Jean Paul Alaux, president of the Board of Directors of the Fontainebleau Art Schools. The session planned is for a maximum of two months between July 1 and September 1. The curriculum will include the study of architecture, with research in urban planning and landscape architecture, as well as painting and sculpture. For further information address M. Labatut, c/o Miss Isabelle Kemp, 206 E. 62nd St., New York City.

LECTURES OFFERED

"Tomorrow's Home," a 10-lecture series dealing with various aspects of planning a home, is currently being presented on Tuesday evenings by University College of the University of Chicago.

The lectures, which started on April 2 and will run through June 4, are being given by a group of architects and housing specialists. Speakers include architects Harry J. Harman, George Keck, Reinhard Lesser and Ernest Grunsfeld.

SCHOLARSHIP

A graduate scholarship in the Department of Architecture, the School of Fine Arts, University of Pennsylvania, has been established by Mrs. Albert Kahn, her daughters and son, as a memorial to the late Albert Kahn. Providing the sum of $1,100, the scholarship will be awarded to a student of outstanding merit to be selected by the Scholarship Committee of the University. It will be offered for award for the first time for the academic year 1946–47.

OFFICE NOTES

Offices Opened, Reopened

James Harlow Anderson and George Patton Simonds (Anderson and Simonds, Architects), have returned to practice following several years with the FPHA, where Mr. Anderson was senior project planner and Mr. Simonds was regional technical advisor, Region VI, San Francisco. Address: 339 Fifteenth St., Oakland, Calif.

Alden De Hart, A.I.A., formerly Major, A.U.S., after serving three years with the Army Transportation Corps, has reopened his office and is resuming his practice at 203 Park Ave., Plainfield, N. J.

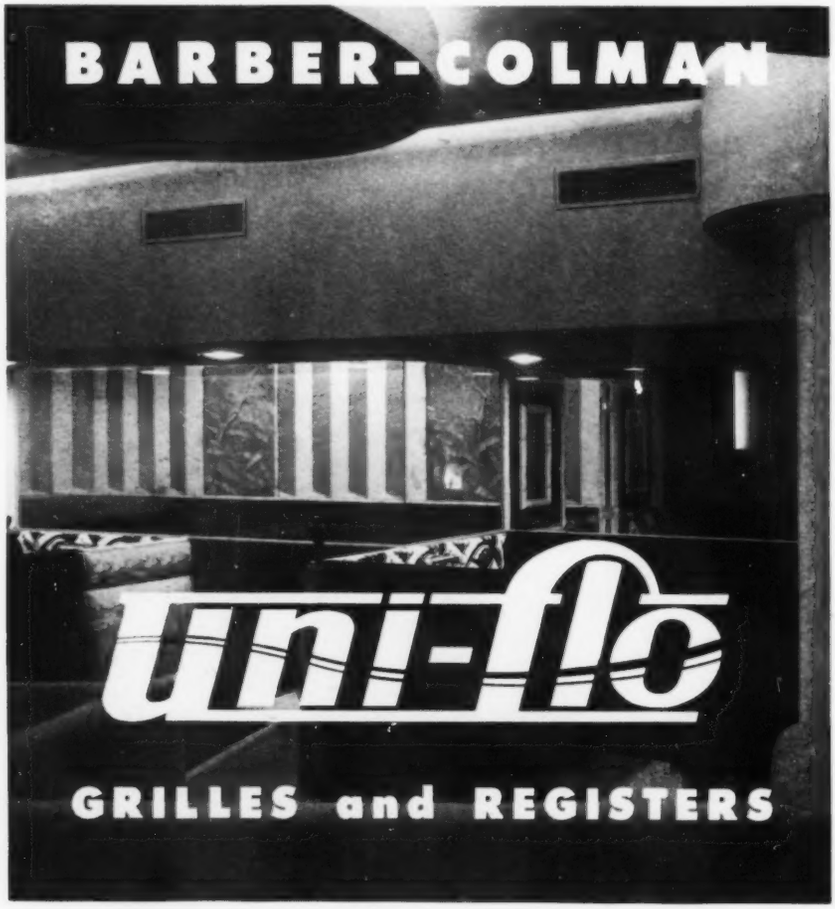
F. Julius Dreyfous and Solis Seiferth announce their return from the armed services and the reopening of their office under the firm name of Dreyfous and Seiferth, Architects, at 328 Audubon Bldg., New Orleans, La.

Edward Fleagle, Architect, has reopened his office at 18 S. Broadway, Yonkers, N. Y.

Ralph C. Flewelling and Associates, Architects, have opened new offices at 3112 Los Feliz Blvd., Los Angeles 26, Calif.

Hermon A. Horn, Architect, after almost five years with the War Department, has resumed the practice of architecture in association with Adolph H.

(*Continued on page 148*)

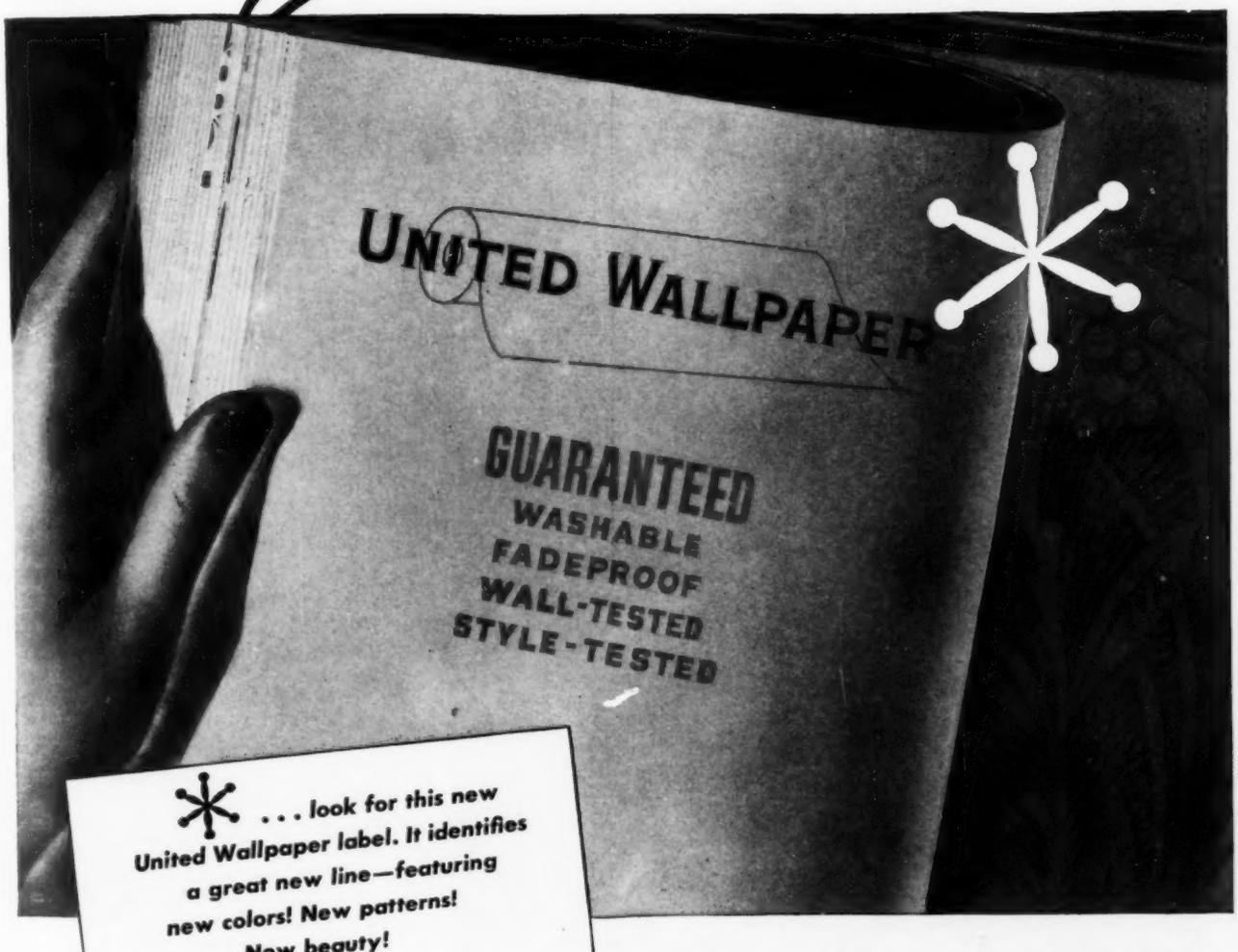


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Victorine and Samuel Homsey have reopened their office at 917 Gilpin Ave., Wilmington 12, Del. Theodore Fletcher will be associated with them.

Prentiss Huddleston, A.I.A., has reopened his office in the Brock Bldg., Tallahassee, Fla.

James E. Loftus, Architect, has opened an office at 803 Omaha Natl. Bank Bldg., Omaha, Neb.

Robt. A. Miller, Architect, has opened an office in the Stock Exchange Bldg., Suite 616, Portland 4, Ore.

Lee Perry, A.I.A., has reestablished his office at 419 North Ave., New Rochelle, N. Y.

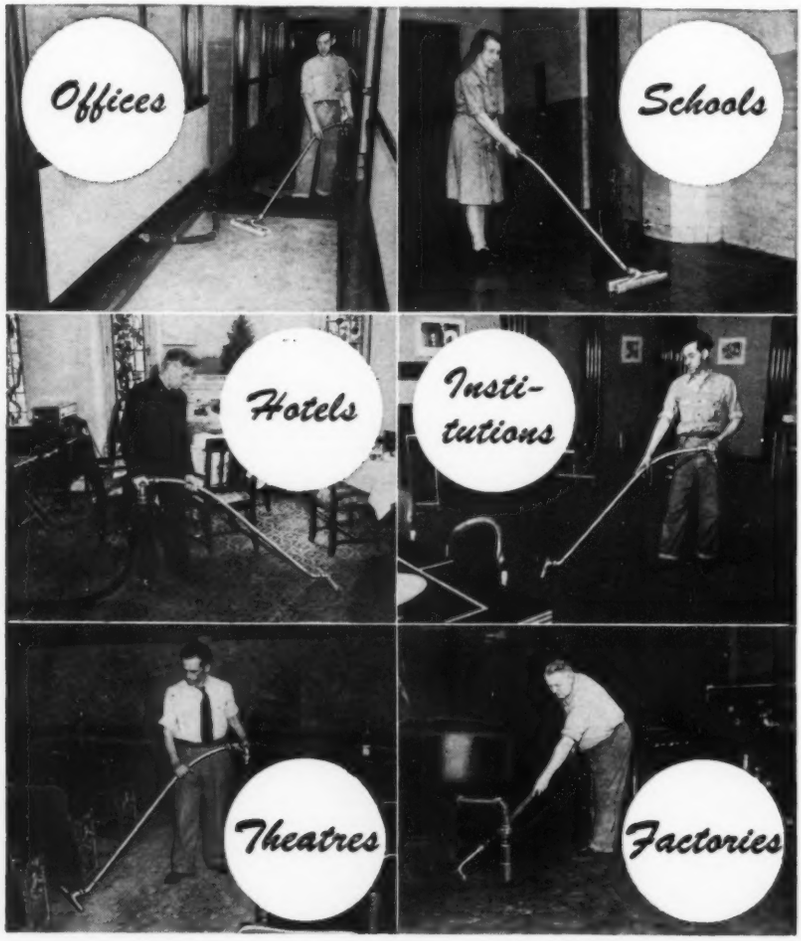
Beryl Price, Architect, has reopened his office at 1911 Pine St., Philadelphia Pa., following his release from the Army. Mr. Price served as a captain in the Corps of Engineers on Saipan.

Levon Seron, Architect-Engineer, has terminated his connection with the OPA and has resumed his practice, with offices in the D'Arcy Bldg., 81 N. Chicago St., Joliet, Ill.

Bernard A. Webb, Jr., Architect, has opened offices at 704 Bankers Insurance Bldg., Macon, Ga.

Frederick W. Whittlesey, A.I.A., has opened offices at 488 Pine St., San Francisco 4, Calif. Before the war, Mr. Whittlesey practiced for eight years in Phoenix, Ariz.

Robert Wilmsen, Architect, has opened an office at 404 Tiffany Bldg., Eugene, Ore.



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New Addresses

The following new addresses have been announced:

Earle S. Draper, Consultant, Suite 42, 1737 H St., N. W., Washington 6, D.C.

National Electric Products Corp., Chamber of Commerce Bldg., Pittsburgh, Pa.

Perkins & Will, Architects-Engineers (formerly Perkins, Wheeler & Will), 309 W. Jackson Bldg., Chicago 6, Ill.

Firm Changes

Munroe Walker Copper, Jr., and his former associates, Robert Verne Wade and Russell Ralph Peck have announced formation of a partnership under the firm name of Copper, Wade & Peck, Architects, with offices in the Heights Rockefeller Bldg., Cleveland Heights 18, Ohio.

Garrett Eckbo, Robert Royston and Edward Williams have announced their association as Eckbo, Royston & Williams, Planning Consultants, Landscape Architects, Site and Recreation Planners, with offices at 21 Columbus Ave., San Francisco 11, and 624 S. Carondelet, Los Angeles 5, Calif.

H. Eugene Grieshaber, Jr., A.I.A., and James F. Neilan, who have been associated in the practice of architecture, have formed the partnership of Grieshaber & Neilan, and will continue to practice at 302 State St., New London, Conn.

Stuart W. Jester, Merchandise Engineer, and Adolph Brukin, Architect, have announced the merging of their organizations, with new offices at 675 Third Ave., New York, N. Y.

Michael T. Lipinski and John A. Valtz have announced the opening of the architectural firm of Lipinski and Valtz, with offices at Lynn, Mass.

Richard H. Marr, A.I.A., has changed the name of his firm to Marr and Marr to include his son, Carl B. Marr, A.I.A., who has been associated with the office for several years. Business will continue at 415 Brainard St., Detroit 1, Mich.

The firm of Geo. L. Mesker & Co. has announced its incorporation and change of name to Geo. L. Mesker Steel Corp. Address, Evansville 8, Ind.

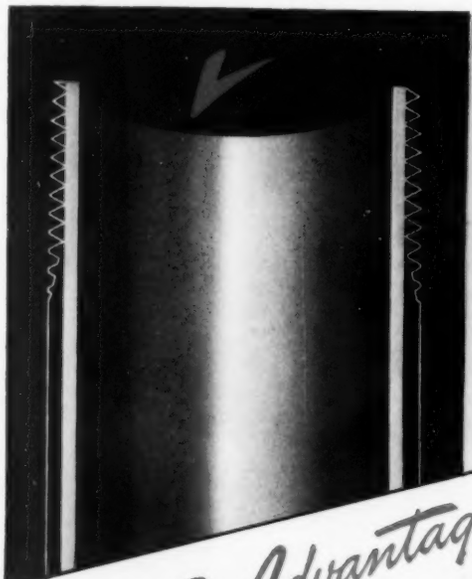
Rudolph J. Mock, who has been as-

(*Continued on page 150*)

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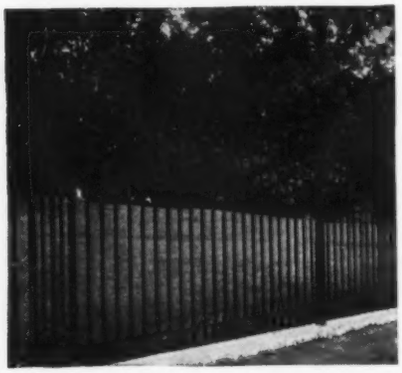
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THE RECORD REPORTS

(*Continued from page 148*)

sociated with a number of leading architectural firms, has joined the TVA Department of Regional Studies in Knoxville as Staff Architect.

Mundie and Jensen, Architects and Engineers, announce that Verne O. McClurg, formerly with Holabird and Root, and Clarence A. Jensen, formerly with the late N. Max Dunning, have been added to the firm, and the firm name changed to Mundie, Jensen and McClurg. Address, 39 S. LaSalle St., Chicago 3, Ill.

Frank Poduska, Sr., formerly chief estimator of the Amsterdam Building Co., is now connected with the Mutual Construction Corp., 7 E. 42nd St., New York.

NEW POSITIONS

Donald A. Campbell, a past president of the National Retail Lumber Dealers Assn., has been appointed to the staff of Housing Expediter Wilson W. Wyatt as special consultant on lumber problems arising out of the Veterans Emergency Housing Program.

Walter P. Davis has been appointed managing director of the Indoor Climate Institute, with headquarters in Detroit.

J. Bradbury German, Jr., former mayor of Utica, N.Y., has been appointed executive assistant to the Commissioner of Housing in the State Division of Housing, New York.

Gail A. Hathaway, of the office of Chief of Engineers, U. S. War Department, is the new vice president of the American Society of Civil Engineers, succeeding the late A. C. Polk of Birmingham, Ala.

F. B. Hornibrook has been appointed assistant director of research of The Master Builders Co., Cleveland, Ohio.

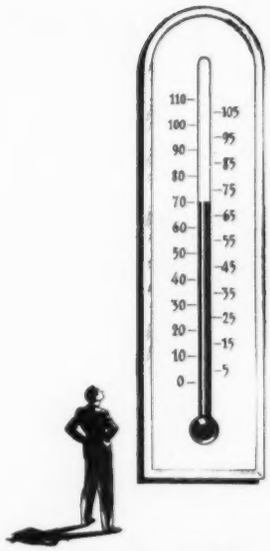
Alexander Kostellow of New York City has been elected president of the American Designers Institute.

Gordon Rieley, vice president of Bryant Heater Co., has been appointed director of the newly established building and construction price division of the OPA and is on leave of absence to assume his new duties immediately.

W. K. Shaw, vice president and treasurer of the Turner Construction Co., has been chosen chairman of the Building Division of the Associated General Contractors of America.

John Vassos has been elected chairman of the New York Chapter of the American Designers' Institute.

Howard P. Vermilya, research director of the John B. Pierce Foundation and formerly assistant director of the Technical Division of the FHA, has joined the staff of Housing Expediter Wilson W. Wyatt as a consultant on technical problems.



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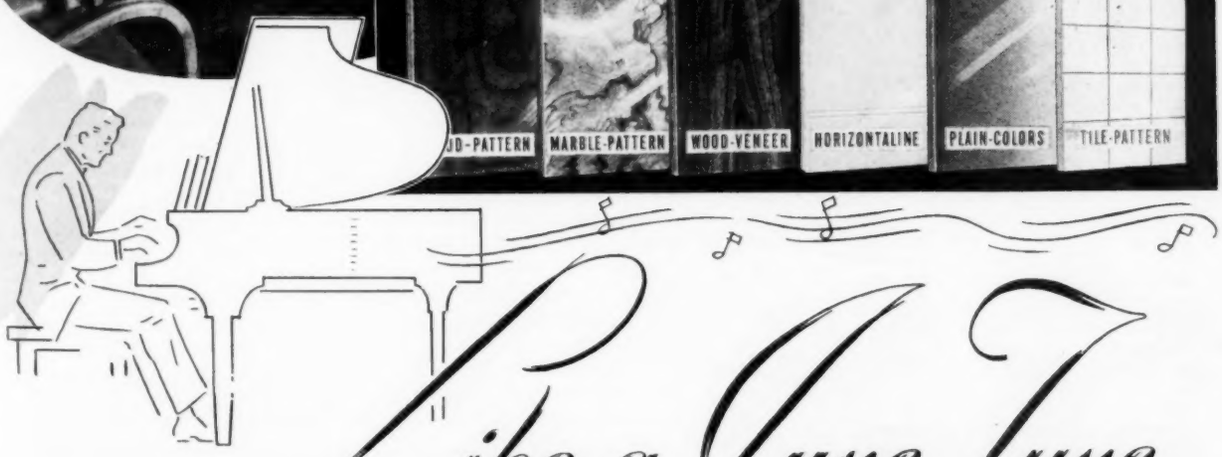
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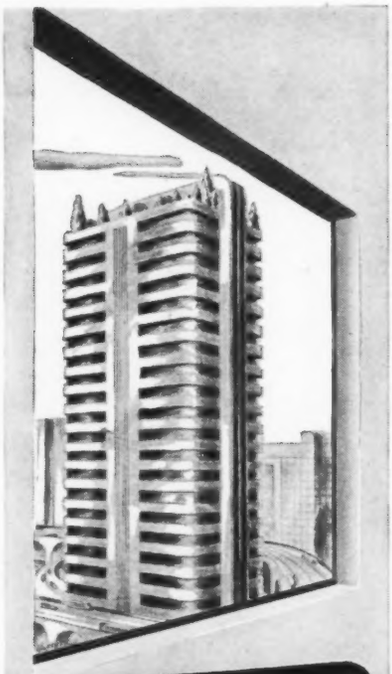
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REQUIRED READING

(*Continued from page 30*)

SYMPHONY

A Primer of Proportion in the Arts of Form and Music. By R. W. Gardner. New York 22 (15 E. 55th St.), William Helburn, Inc., 1945. 10¼ by 14¼ in. 110 pp. illus. $8.00.

To the person interested in the "pattern of proportion," this textbook will prove of absorbing interest. It does not pretend to offer a formula for creative design — in fact the author is very careful to point out that no such formula exists. What it does do, however, is to analyze the *whorl of Euclidean areas* and show how neatly all good design falls within the concentric arrangement of the whorl. Monuments, city squares, cathedrals, bridges, vases, all conform to the pattern. Even the city of Paris in its entirety, when diagrammed by the adroit pencil of Mr. Gardner, follows the rule of the whorl. In some cases, no doubt, the architect or the designer or the city planner consciously followed the principles explained here; in others, probably, an innate feeling for proportion unconsciously produced the same result.

WAR MEMORIALS

Commemoration through Community Service: Trends in Living Memorials. Anne Holliday Webb, ed. New York 16 (470 Fourth Ave.), The American City Magazine Corp., 1945. 12¼ by 9¼ in. 36 pp. illus. $1.00.

With almost every community in the country considering some sort of war memorial, this timely brochure is concerned with the form that that memorial should, and is likely to, take. "The prevailing preference," it reports, ". . . is for some form of living memorial, something which will enrich the life of our neighborhoods and communities and thus carry forward the democratic way of living for which this war has been mainly fought. . . ."

Proposing as the highest type of memorial the building of a worth-while community life, the brochure contains statements by such men as Mark A. McCloskey, director of the FSA Community War Services; Howard Braucher, president of the National Recreation Association; and Daniel Danzig, USO program director. It discusses the lessons in community living learned from the war, the analysis of a community's existing resources, the function of the community center building, the organization of councils and committees to plan the memorial, and the financing. It proposes a National Communities Institute through which the activities all over the country may be interrelated. And it features a schematic arrangement of a community center building, the work of Antonin Raymond, New York architect.

(*Continued on page 154*)



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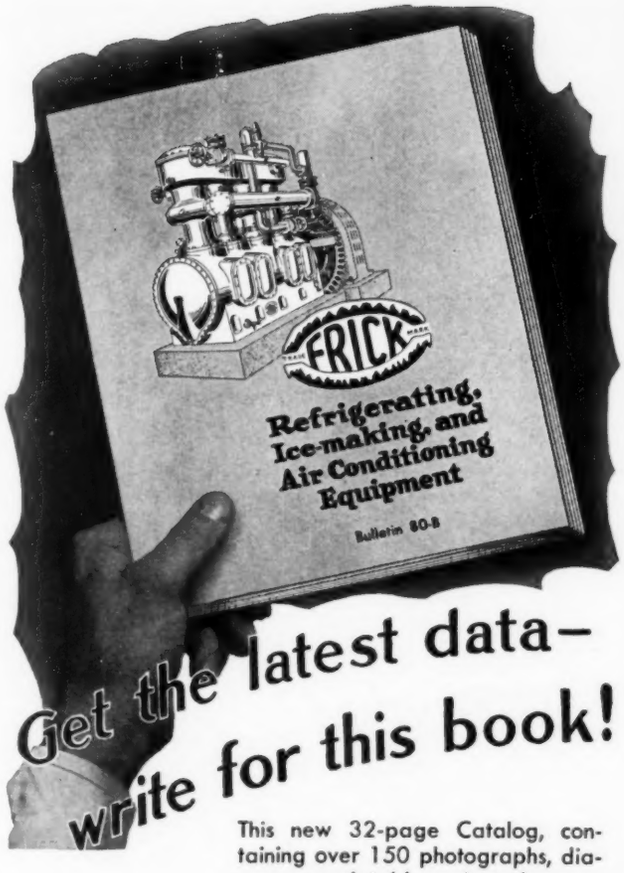
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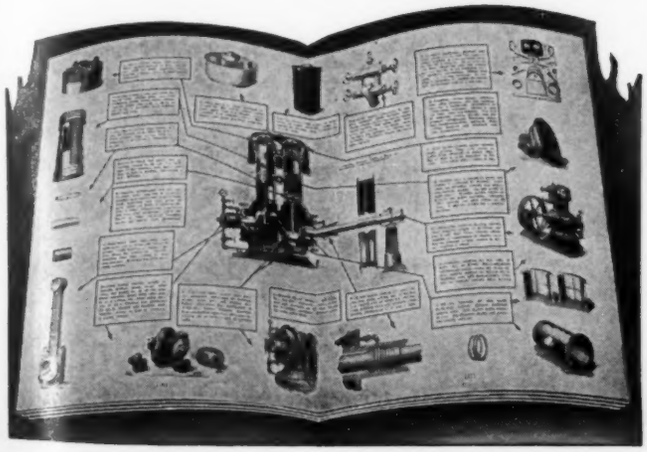
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REQUIRED READING

(*Continued from page 152*)

Periodical Literature

NEIGHBORHOOD PLANNING

The Planning of Residential Areas. By Gordon Stephenson. London (66 Portland Place W. 1), Journal of the Royal Institute of British Architects, Feb., 1946, pp. 107–112, illus.

Compared with the American goal of from 12 to 15 million new dwellings in the next 10 years, England's housing target of only four million, especially in view of her heavy bombing damage during the war, at first glance may seem very small. But this is exactly twice her rate of building in the two decades immediately preceding the war. It is, as Mr. Stephenson says, a possible goal. It is no small job, however: "In 10 years," Mr. Stephenson points out, "we are to build one-third as many dwellings as now exist. Here is a great opportunity to start the comprehensive remodeling of the larger part of every town."

The architects of England, it is obvious from this article, are stressing, just as are architects here, lower population density per acre, integrated and self-sufficient residential areas incorporating "all those buildings and residential facilities that modern civilization demands," and plenty of recreational open space; and "ingenuity, variety and simplicity should be exercised in the design and arrangement of groups of dwellings." Finally, "urban redevelopment can never be satisfactory if the approach is piecemeal. The problems have to be seen as a whole."

Mr. Stephenson, who holds a degree from the Massachusetts Institute of Technology, is thoroughly conversant with planning in this country as well as in England and on the Continent. His comparisons are generous enough to give a good over-all picture of current planning trends.

NOVEL DRUG STORE

Designed for Self-Service. By E. Bly. New York 22 (572 Madison Ave.), American Druggist, April, 1946, pp. 94–97, 206, illus.

Although considerable experimenting has been done with the idea, the self-service drug store is still something of a novelty. For that reason, this article reporting on the construction cost and operational history of a recently opened such store in Salt Lake City is of particular interest.

The new store is 28 by 80 ft. in floor area, which, according to the owner is the minimum size for such a store. Only three departments — prescriptions, colognes and perfumes — are not self-service. Display locations of some merchandise have been kept flexible to keep it moving and permit featuring.

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